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A
C O U R S E

O. F.

Chirurgical Operations,

W
Demonstrated in the

ROYAL GARDEN

A T

P A R I S.

By Monsieur DIONIS, Chief Chirurgeon
to the late DAUPHINESS, and to the pre-
sent Dutcheſs of BURGUNDY.

Translated from the Paris Edition.

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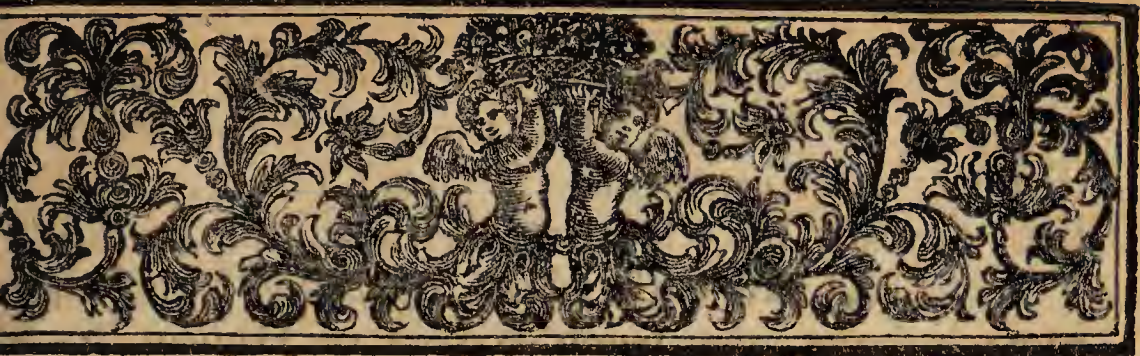
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Ex Libris Jacobi Atkinson
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Chirurgus
Lond.

The first 6 vols. are
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Ex Libris Jacobi Atkinson Chirur.

T H E

P R E F A C E.



ALL Philosophers are agreed on the importance of *Physics*, which Science, in order to instruct us in the History of Nature, does not content its self with mounting up to the Heavens, examining what passes in the Air, de-

scending to the bottom of the Sea, and raking into the Entrails of the Earth; but penetrating into every Being in particular, acquaints us with all the Parts which compose and form the Ornament of the Universe.

This Science cou'd not discover the Springs which actuate all the Bodies we see, without the Assistance of Anatomy, by whose means dissecting and separating all the Parts, even to the minutest Particles which compose the whole, it lays open all the Secrets of Nature; and a Course of Philosophy wou'd be imperfect, if depriv'd of the Lights which Anatomical Demonstrations afford it.

If the Natural Philosopher is indispenfably obliged to have recourse to Anatomy, to discover the internal Part of each Being; how much is the

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Chirurgeon oblig'd to apply to it, considering his Object is the Body of Man, the most perfect Piece that ever came out of the Creator's Hands. The first satisfies his Curiosity, with adding to his Knowledge, that with which Anatomy furnishes him; but the other being to work on Human Bodies, is not to be ignorant of any one Spring that occasions its Motion, if he wou'd be a good Chirurgeon.

The Knowledge of the Subject naturally ought to precede that of the Operations to be perform'd on it; which is the reason, that every Winter, at the Royal Garden, we begin with the Anatomy of the first Body that offers; and afterwards, on another, perform all the Operations practis'd in Chirurgery; and the same Reason engaged me to print my Anatomy of Man's Body, before the Course of Operations which I now publish.

The King, better inform'd than any in his Dominions, of whatever can contribute to the good of his Subjects, by a particular Declaration, which he caused to be verified and registred in his Presence in *March* 1673. ordered, that the Demonstrations of Anatomy and Chirurgical Operations shou'd be Annually held in his Royal Garden *gratis*, and with the Doors open, in order to furnish young Students in Chirurgery with the Means of perfecting themselves in their Art, which his Majesty has always looked on as one of the most necessary in a State.

I call Chirurgery an Art, in order to confine my self within the bounds of its Etymology, which derives it from the two *Greek* Words, *Keir*, which signifies a Hand, and *Ergon*, which imports Operation; so that Chirurgeon and Manual Operator are Synonymous Terms, common to all who work with the Hand. Tho' by this Etymology the Chirurgeon seems to be confounded with all other Artists, 'tis thence redounds his greatest Glory; since it distinguishes him from, and places him above, all the
rest.

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rest. The Ancients, who gave Names to all Arts, called him a Painter who painted Pictures, Sculptor him who carv'd Images, &c. But by way of Excellence have left that of Chirurgeon to him who operating on Human Bodies, has for his Object the noblest of Beings.

We might indeed somewhat justly bestow on Chirurgery the Name of a Science, contrary to the Opinion of some who will have it to be barely a Mechanic Art; 'tis true, it operates with the Hand; but its Performances being only such as Reason dictates, it does not less deserve the Name of Science than the Mathematics, which trace out on Paper those Figures and Demonstrations which the Mind suggests: Both these Sciences equally require their proper Instruments; and as the use of the Mathematical ones belongs only to the Mathematician, so Chirurgical are peculiar to the Chirurgeon; for the Separation of the Theory from the Practice is equally impossible in both these Sciences: And as we shou'd think him an ignorant Mathematician who could neither delineate his Figures, nor frame his Demonstrations; we ought also to believe him incapable of helping those who require his Assistance, who stands in need of any Hand besides his own to Cure the Diseases of which he boasts the Discovery.

We may, if we please, not only rank Chirurgery amongst the Sciences; but look on it as one of the noblest, most certain, and most necessary of them all. That which ennobles a Science is the Dignity of its Object. That of Chirurgery is the same which God had of his Omnipotence, and on which he was pleased to work with his own Hand; for in the Creation of other Beings, Holy Writ informs us, that God only spake, and they were made: And when this Science directs any Performance by the Suggestion of a Train of Consequences which it deduces from its Principles, 'tis certainly the

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same Body to which it is to be apply'd: Can the Chirurgeon alledge any thing more glorious for himself, than that God, after having made Man, and given a Form and Figure to all the Parts of his Body perfectly proper and suitable to the Actions to which they were destin'd, left him in the Chirurgeon's Hands to take care of his Preservation, and keep up the Symmetry of all the Parts which he receiv'd from the Creator. God, when on Earth, practis'd this Art, exercising on all Occasions that perfect Chirurgery in all its Parts, which at the same time as it knows the Indisposition, applies the Hand and Remedy to cure it; and the Apostles, the Successors of his Charity as well as his Power, did not disdain the Application of their Hands to the Infirmities of Patients, and by their charitable Assistance, converted an infinite Number of People, who seeing them perform extraordinary Cures, were convinc'd of the Truth of their Doctrine. Kings and Princes made Dressing the Patients, which implor'd their help, their principal Occupation, not thinking it below their Dignity to apply their Royal Hands to the curing and relieving of the same Subject which God himself had form'd with his sacred Hands; and without ransacking Antiquity for Instances, we have seen our own Sovereign cause to be prepared in his Presence, and charitably distributed to all who ask'd it, a Remedy which he received from the Prior of *Cabrieres*; so that in all Ages Chirurgery has not been thought unworthy the Practice of the greatest on Earth.

The Certainty of Chirurgery is manifestly proved by the wonderful Effects which it produces. In Couching of Cataracts, it instantly restores Sight to the Blind. In emptying the Breast by the *Empyema*, it makes the Dumb speak; and by reducing Luxations of the Leg and Foot, makes the Lame to walk. In short, nothing is more certain than what it does, in adding to the Body what is deficient, in retrenching

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retrenching what is superfluous, and keeping it in the Perfection bestow'd on it by the Author of Nature: And though all Operations seem Miracles, because they Cure in an Instant, they are yet no more than the ordinary Effects of Chirurgery; whose Certitude cannot be too much admir'd.

To prove the absolute necessity of Chirurgery, we need only consider, that all other Arts and Sciences are no farther necessary to Man, than as they contribute to his commodious Living; but that Chirurgery is absolutely necessary, even in order to his very Living; for at the moment of his Birth he implores its help to make the Ligature of the Navel, or to cut the String under the Tongue, (which frequently he brings into the World at his Birth,) without which he wou'd perish as soon as Born. We may add, that without this Science the Earth would be almost depopulated, by reason that there are few People in the course of their Lives, on which Chirurgeons have not perform'd some Operation, to save them from Death. If we don't dress a thrust of a Sword, or a Musquet-Shot thro' the Body, if we don't Trepan the fractur'd Skull, if we don't perform the *Bubonocèle* in a Suffocation of the Intestine, the Man infallibly dies; and consequently we must allow the Necessity of Chirurgery, which daily raises several Persons from the Brink of the Grave, into which they would sink without it. How many wounded Men has it cured in the Army? How many great Commanders would have died of their ghastly Wounds without its Assistance? Chirurgery triumphs in Armies and Sieges; 'tis there that its Empire and Necessity is own'd; 'tis there that its Effects, and not Words, express its Elogy. We hear some, in reciting their Wounds, own themselves accountable to it for their Life; we see others, who, relying on their Confidence in Chirurgery, afresh expose their Lives for the Service of their Prince, being justly perswaded

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that they shall find their expected Assistance from it.

'Tis such surprising Effects of Operations which set such a value on Chirurgery: Wherefore, whoever engages in the Profession of it, ought to neglect nothing that can contribute to his Instruction, or Perfection in it. To attain this End, *Paris* furnishes him better with Means, than any City of *Europe*; there are held publick Demonstrations in three different Places of the City; at the *King's Garden*, the *Medicinal School*, and at *St. Cosme*; which all being performed by sworn Master-Chirurgeons of that City, are laid down with utmost Exactness.

For the space of eight Years I have performed those in the Royal Garden, to which the Concourse of Students was so great, that the largest Hall destin'd for them would not hold one half of the Auditors; which oblig'd us to prepare seal'd Tickets, which we distributed to Chirurgeons Apprentices, that they alone might enter, and to avoid Confusion by the Exclusion of those who were plac'd to serve their time in Barbers Shops, and of those whose bare Curiosity drew them thither.

'Tis the same Course of Operations which I have so many times demonstrated in the *King's Garden*, which I now publish, hoping it may not only prove useful to those, who by reason of the distance of the places of their Residence, or their being settled in the Country, could not be my Auditors; but also to those even in *Paris*, who being oblig'd to perform any of these Operations, may, by consulting it, find what may have escaped their Memory.

If this Course of Operations is favourably received by Chirurgical Students, and if those of riper Knowledge shall think it deserves their Approbation, all the Merit it can pretend to, is owing to the Company of *St. Cosme*; before which Society, when

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I commenced Matter of our Art, I only repeated the Instructions which I learnt in that celebrated School. The four Provosts of which, whose Post it is to oblige the Candidate to perform all the Operations on the appointed Subject during the Anatomical Week, never omitting any essential Circumstance: If he acquits himself well, they enquire into the Reason of his good Performance; and if he fails, they correct his Mistakes, and instruct him; so that he who has perform'd his Probationary Operations at *Paris*, may uncontestably be allowed to be a good Chirurgeon.

Mr. *Felix* designing to get his Son into his Place, resolved to make him commence Master, and oblig'd him to perform his Master-piece with all the Severity which is required of Candidates. Monsieur *Mareschal*, who is first Chirurgeon to the King, obliged his Son to follow this Example, and he accordingly run through the Probationary Operations with the same rigid Exactness which all others do. As for my self, I have two Sons, who were desirous of embracing our Profession; one of them is Chirurgeon in Ordinary to the Dutcheſs of *Burgundy*, and the other Chirurgeon-Major to the King's Army in *Spain*: As soon as they determin'd to be Chirurgeons, I expos'd them to this Trial; they perform'd their twenty five Acts with the utmost Vigour, and learnt in that Society what they could not meet with elsewhere. God grant that the easie and conniving Admissions and superficial Examinations which have introduced into that Society several who thought themselves not able to incorporate themselves by the Master-proof, don't diminish its ancient Splendor, and bring it to relax the Regularity of its Acts, by prodigally allowing to be Masters, Persons unworthy of that Title, and that the School at *Paris* may keep up its former Reputation of being the best in the World.

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These Operations having been Demonstrated in one of the Halls of the King's Garden, where was erected a sort of Amphitheatre, 'till his Majesty pleases to order the Building of a more magnificent one, worthy his Grandeur, as he has already determin'd; I caused to be Engraven the Amphitheatre of St. Cosme, which you see at the Head of the first Demonstration, in which all the Spectators are assembled. I chose this Model as the most stately of any at *Paris*, and to shew such an one as is requisite for the very commodious Performance of publick Demonstrations.

I have divided this Course of Operations, as I did my Anatomy, into Ten Days. The first treats of General Operations and Sutures; the second of Operations practis'd on the Lower Venter; the third of those on the Bladder, Yard and Matrix; the fourth on those requir'd by the Groins, the *Scrotum* and *Anus*; the fifth on those perform'd on the Breast; the sixth on those on the Head, Eyes and Neck; the seventh on those on the Parts of the Face; the eighth on those on the upper Extream Parts; the ninth on those on the Lower; and lastly, the tenth on those which may be practis'd on all Parts of the Body. I thought this Method would prove clearer to young Students, than if I had crowded them confusedly together, as we see other Authors have done.

At the Head of each Operation I have prefix'd a Plate, representing the *Apparatus* which the Chirurgion is to prepare, before he proceeds to the performance of the Operations: Those which are light, and require no *Apparatus*, I have omitted; and in those where only an inconsiderable one is necessary, I have caus'd several to be Engraven on one Plate. The Number of these Figures is sixty one, which shews that I have not been sparing of them, but inserted as many as I thought necessary for Instruction, and to the Perfection of this Work.

Through

The P R E F A C E.

Through the Discourse, on each Operation are interspers'd Alphabetical Letters, which refer to those Engraven on the Plate; so that he that would inform himself how the Operation is perform'd, will find the first Instrument he is to make use of mark'd A, and proceeding forwards in order, and the last, whether Instrument or Bandage, mark'd with the last Letter Engraven on the Plate.

I have, as much as I could, avoided the harsh and barbarous Names which the *Greeks* have given to Diseases, and their requisite Operations: I aim'd at writing *French*, and to express my self in the Terms most used in our own Language.

But I yet begin with an Explication of their Etymology, that the young Chirurgeon may know from what Originals are deriv'd those Terms so difficult to remember; I continue on with the Definition, Differences, Causes and Signs of each Indisposition; and prescribe proper Remedies for its Cure. And if it obstinately resist them, and we are forc'd to come to Operation, I have laid down what is to be done before, during, and after it, and how the Patient is to be managed in the Dressing; so that 'tis not my Fault if the Chirurgeon does not obtain the propos'd End, which is a perfect Cure.

I make several Remarks, and relate several Historical Facts, which ought to encourage the Chirurgeon to undertake Operations. In the forty six Years in which I have practis'd Chirurgery in the City, and at the Court, I have met with so many Opportunities of performing them, that all that I advance is founded on my own Experience: Wherefore the Reader may believe me, and the rather, because I cite very few Particulars on the Credit of any other.

The Pictures which I have drawn of several who have mounted the Stage, in order to act several different Parts in Physick and Chirurgery, are drawn from

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from the Life; and the Reader may depend on the Truth of them, for I knew the Originals, and in all Relations I speak with my usual Sincerity; nor do I recite these Instances for any other Reason, than to render a Service to the Publick, that People may carefully avoid the entrusting themselves into the hands of those Men, who promise infinitely more than they are able to perform; or those, who being stock'd with no more than one bare Remedy, rashly administer it to all who consult them. If any one finds himself injured, either in his own Person, or those of his Friends, I declare that I don't herein design to fall foul on any Man's Life, Manners and Probity; but only attack those who, with Impunity, have put on the Character of Physicians, or Chirurgeons, barely because they had just a slight Tincture of either of those Sciences. I don't blame those who charitably distribute Remedies to the Poor, who ask it of them; I know a great many give them out of a good Intention of relieving the Patients, and without any Eye on Interest; but I know withal, that a Person may be very charitable, and yet an ill Physician, or a bad Chirurgeon.

A

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A
COURSE
OF

Chirurgical Operations,

DEMONSTRATED

In the King of FRANCE's Garden.

Of Operations in general.

DEMONSTRATION I.

GENTLEMEN,



PURSUANT to the Establishment so wisely instituted, to the Glory of the Prince and the Advancement of Chirurgery, we are this Day assembled, to begin to treat of the Subject before you, a *Course of Operations*, which I hope we shall finish within the compass of the ten Days usually employ'd in this Exercise.

The Demonstrations which we are ready to make, are such as are absolutely necessary to those who design for Chirurgery, and are ambitious of the Name of Chirurgeons: A Name formerly so highly esteem'd, that even the greatest Princes themselves did not disdain to bear it; but caused themselves to be called by the name of that part of this Art, in which they excell'd, as may be concluded from the Etymology of the Names of *Hercules*, *Æsculapius*, *Machaon*, &c. so boasted for their extraordinary Cures.

It being certain that our Profession is wholly employ'd in the Preservation and Restoration of Health to Man, the most accomplish'd Master-piece of the Universe, it ought to be allow'd a Rank proportionably as far above other Employments, as its Object is preferable to theirs, and its End to the greatest Designs which they can propose. And a little Reflection on the powerful Aids daily drawn from this great Art, which acts alone on manifest certain Principles, will soon convince us that no sort of Men are more advantageous to a State than good Chirurgeons.

Description
of a good
Chirurgeon

By good Chirurgeons I don't mean those who pretend to that Character, because they have learn'd to spread a Plaister, and to Bleed; nor those, who, influenc'd by no other Ends than those mean ones of Interest, have intruded into that illustrious Body: But I would be understood to speak of those, who, after a commendable Education, have imbib'd the Precepts of Chirurgery from good Masters, and have afterwards practis'd in the Hospitals and Armies, conform to those Lights and the sound Method which they learn'd at the School of St. Come, undoubtedly the Place where the most able Chirurgeons of Europe are form'd. To conclude, I mean those, the principal End of whose Labours is not fordid Gain, but the Glory of Curing, or Easing as much as possible, all those in general who want their Assistance.

Definition
Chirur-
ery.

Chirurgery is variously defin'd by different Authors: Some have honour'd it with the Title of a Science, others have affirm'd it to be barely a Mechanick Art, and yet others have maintain'd it to be both an Art and Science together, and that neither of them can possibly be separated from it, without rendring it imperfect. As for my self, who am amongst the number of the last, I say, that *Chirurgery*, in all its Extent, is a Habit of the Understanding, form'd by Study, and Reflection on Experience, by which we know the Diseases of Human Bodies; and at the same time a Dexterity acquir'd by frequent and well order'd Use, in applying with the Hands, by the help of Instruments, Remedies to those Places where they are wanting.

Division of
Chirurgery.

All the Ancients have also divided *Chirurgery* into two Parts, namely, the *Theorick* and *Practick*: They tell us, that the first is a Science, which teaches the Manner of Operation in the curing of Diseases; and will have the second to be an Art, which effectually Cures by manual Operation rightly directed. There are some Physicians, who, though they follow the same Division, express themselves in different Terms, and divide the whole Body of *Chirurgery* into *Medicinal* and *Rational*, and *Manual* and *Operative*; upon which distinction they establish two Parts of it, which may be possess'd separately by two Persons, pretending the first to be the Physicians share, and the second to belong to the Chirurgeons.

But it must be granted that the Chirurgeon, to whose Lot no more than this *practical Manual* and *operative Chirurgery* falls, will frequently run the risque of Killing or Laming his Patients, when without the Direction of a Physician; and, even in the

Presence

Presence of the Physician himself, will he not be in danger of committing Faults, if his Hand be not guided by his Head? 'Tis certain, that to walk well, good Eyes and agile and pliant Legs are requisite, and that the one without the other is insufficient for that purpose. A blind Man, for instance, provided with good Legs, and led by a quick-sighted and faithful Guide, may stumble for want of Light. So, whatever Experience a Chirurgeon may have, if he have not the Knowledge which ought to direct him in his Operations, he will work in the dark; and if he be not a good *Theorician*, he will never prove an able *Practitioner*.

A Chirurgeon must then be Master of both these Parts of *The Chirurgery*. The first is acquir'd by the knowledge of the Diseases with which Men are afflicted, and the second by contracting a Habit of well performing all those Operations which the Cure of them can require; which, by the famous *Guido*, is compriz'd in six Tracts, the first of which treats of *Tumours*, the second of *Wounds*, the third of *Ulcers*, the fourth of *Fractures*, the fifth of *Luxations* or *Dislocations*, and the sixth of those Diseases which are not comprehended in the five precedent Treatises, as the *Scurf* or *Scab*, *Gout*, *Pox*, *Pest*, and several others; the understanding of which, as well as those just now mentioned, composes what is called *Theoretical Chirurgery*, on which ought to be founded the second Part, which is called the *Practick*.

I suppose then, that all here present are instructed in the *Theory of Chirurgery*; and in this Course I confine my self to entertain you with nothing extraneous to what all Men understand by *Chirurgical Operations*; all which I pretend to demonstrate to you, which will abundantly fill up the time usually allow'd to publick Lectures.

No one is ignorant of the indispensable Obligation the Chirurgeon lyes under, of being acquainted with *Anatomy*, before he pretends to know the Distempers incident to Mankind, or hazards the performance of any Operation. The knowledge of the Structure of our Bodies, is the Basis and most stable Foundation of *Chirurgery*, and accordingly 'tis allow'd the first Rank amongst all the Sciences which contribute to the forming an able Chirurgeon; wherefore we annually commence our Instructions by *Anatomical Demonstrations*, in order to prepare our Auditors to a profitable hearing of those *Chirurgical Operations* which we afterwards demonstrate.

By *Chirurgical Operation* we ought to understand a prudent and methodical manual Application to human Bodies, in order to the Preservation or Restoration of Health.

All *Chirurgical Operations* reduce themselves to four Sorts, the first of which rejoins what was separated, and is called *Synthesis*; the second separates those Parts whose Union is inconsistent with Health, and is call'd *Diuresis*; the third, express'd by the word *Exaresis*, removes whatever is superfluous; and the fourth, which is term'd *Prosthesis*, adds what is deficient.

What Synthesis is.

Synthesis is an Operation which dextrously re-unites and replaces those Parts of our Bodies, which are separated or displaced contrary to the common Course of Nature; and is either General or Particular: The first Sort is common to all Operations, and is that which is referr'd to the application of *Splints* or *Ferula's*, *Plegets* or *Bolsters*, *Bandages*, the proper Situation of the Part affected, and in general all the Instruments and Ways which may contribute to the Restoration or Re-establishment of any of the Parts in its place. The second is employ'd as well on the softer or fleshy Parts, as on the harder or bony; that Portion of it, which regards the softer Parts, is perform'd two ways, *viz.* without Division, when it is called *Taxis*, that is *Reduction*; or by Separation, which is term'd *Raphe* or *Suture*. That part of *Synthesis* which regards the harder Parts, is also subdivided into two Species, being engaged in the re-uniting of broken Bones, and re-placing or setting of *luxated* or *dislocated* ones.

Synthesis excels all other Operations, by reason that besides its being the most necessary of them, it makes use of the most simple and easie Methods to restore to human Bodies that Perfection of Parts which they receiv'd from Nature.

Definition of Diæresis.

Diæresis divides and separates those Parts whose Union and Continuity is an obstacle to Cure, or which, contrary to Nature, are grown and united together. This Operation is perform'd four several ways, *viz.* by *Corrosion*, *Punction*, *Evulsion* or *Plucking*, and *Burning*: These four Divisions exactly agree with the softer and harder Parts; and this part of *Chirurgery* extends to so many different Circumstances, that a Subdivision would rather tire than improve you, since I hope to display all of them in the Course of these Operations.

What Exæresis is.

Exæresis is an Operation which retrenches and extracts from the Body whatever is superfluous, noxious and exotick. This Operation is perform'd two ways, either by *Extraction*, as when we are obliged to draw out of the Body those things naturally engender'd in it, and which yet become Exotick, as a dead Child, or obstructed Urine; or by *Detraction*, when we remove from the Body those exotick Particulars which have been introduced from without, which is perform'd with or without Wound or Incision, as when Matter is lodg'd in the Cavities furnish'd with large Issues, such are the Nose, the Ears, &c. To conclude, in order to the due performance of what *Exæresis* requires, we ought first to examine what Part it is from whence we design to draw out any thing; secondly, what those exotick Bodies which we would separate are; and thirdly, what Instruments are proper to be employ'd.

Definition of Prostheses.

Prosthesis is the fourth Chirurgical Operation; and which, by the fitting of Instruments to the Body, supplies its deficient Parts: These Deficiencies happen either naturally, as when some Part is wanting in an Infant at its Formation; or accidentally, when a Person has lost in War an Eye, an Arm or a Leg: In which case we have Recourse to some Instrument, to repair the Loss of the Part of which we are unfortunately deprived.

Four several Advantages are observ'd in this Part of Chirurge. *Its Advan-*
ry; the first regards the Necessity of some Action, as adding a *tages.*
wooden Leg to enable the Person to go; the second is the re-
storing some part to its use, or facilitating its acting, as applying
to the Roof of the Mouth of those whose Palate is corroded or
perforated, a thin Silver or Leaden Plate, without which they
could not speak, but thro' the Nose, nor swallow but with Pain;
the third is Ornamental, as when we fix a painted Glass-Eye,
thap'd like the natural one, in its Orbit; and the fourth, is the
redressing the irregular disproportion of any Part, as when Steel
Boddice are apply'd to young Children, whose Spine and Sides
jet out, and they grow crooked and deform'd.

Under these four sorts of Operations are comprehended all *What Op-*
those which I propose to shew you; but Authors differ on the *der to be*
Order to be observ'd in the demonstration of them: Some, of *observ'd in*
which Number is *Thevenin*, will have us commence with those *the Demon-*
belonging to *Synthesis*, continue on with those relating to *Diare-* *stration of*
sis; from thence proceed to those which depend on *Exare-* *Operations.*
sis; conclude with those directed by *Prosthesis*: Others, amongst whom
is *Fabricius* of *Aquapendente*, have plac'd those Operations per-
form'd on the Head before all the rest; from them they proceed
to those of the Breast, and descend to those of the Belly, and
end with those of the extreme Parts: And lastly, others assert,
that in order to keep the Subject long enough, we ought to fol-
low the most usual Order of *Anatomy*; and to that end begin
with the lower Venter, in order to empty it immediately after
the finishing of the Operations practis'd in that Region; from
whence we should ascend to the Breast, and then to the Head,
reserving the extream Parts for the last. Which Method we shall
observe, as the most commodious for the Preservation of our Sub-
ject, and most follow'd in publick Demonstrations.

Some of these Operations are light, and sometimes very easy
to be perform'd, as *Phlebotomy*; others attended with great Dif-
ficulties and Dangers, as that of the *Bubonocoele*, or *Rupture*; and yet
others are ordinarily accompanied with great Pains, and strike Hor-
rour in the Spectators, as the *Amputation* of a Leg, or an Arm.

Farther, there are Operations, some of which are absolutely *That Ope-*
necessary to Life; insomuch that the Performance of them can- *rations are*
not be dispens'd with, without exposing the Patient to Death; *necessary.*
such are those of the *Empyema* and *Trepanning*; and others which
are only requisite to the Convenience of Life, as the endeavour-
ing to stop a *Fistula Lachrymalis*, or couching a *Cataract*. Last-
ly, amongst the great number of Operations which you find de-
scrib'd in Authors, are several which are rejected as too cruel or
wholly useless, as large Incisions in the Head, and cauterising the
Liver, Spleen, and *Condyls* or Knots in the Joints.

'Tis not only in the number of Operations that we disagree *Practical*
with the Ancients; we differ yet more from them in the manner *Chirurgery*
of learning the Performance of those which they have taught us. *now better*
They have describ'd them as they were practis'd in their Times, *than ever.*

when the Animal Oeconomy was but very imperfectly known ; but at present, when Chirurgery, improved by the Genius of an infinite number of Learned Men, has acquir'd more Lights, and is more refin'd than ever ; we separate from it whatever is rough and barbarous, we retrench those burning Irons and horrible Instruments, which not only the Patients, but the By-standers, could not see without trembling ; and by an easier and more human Method, cure the Patients more certainly than was formerly done by those great Preparations which were sufficient to terrify even those of the greatest Intrepidity.

Circumstances necessary to the due Performance of Operations.

To the well Performance of Operations, are requisite a ready Dispatch and Assurance of Success, join'd with the Ease of the Patient, and Dexterity and Security in the Operator. By Dispatch, is meant the Diligence which we bring along with us in the Operation or Cure ; by Security, is meant our Knowledge when 'tis proper to employ the Means prescrib'd by Art for the perfect curing of the Disease, and preventing its Return, or being accused of being the Cause of another, and greater. The Patient's Ease and Satisfaction consists in being put to as little Pain as possible, and not being deceiv'd ; that is, that nothing be done without his Consent ; and that the Chirurgeon do not like the Mountebank, promise to cure him in too small a time : For a Chirurgeon ought to distinguish himself from those ignorant Pretenders, and take care that the Effect always answer his Promises. To conclude, the Dexterity or Address of the Operator ought to appear, not only in the Niceness and Exactness of his Work, but also in the mature Reflections which he is oblig'd to make on the six or seven Circumstances, commonly express'd by the following Latin Verse.

Quis, quid, ubi, quibus, auxiliis, cur, quomodo, quando.

That is, *who, what is it, where, what Means, why, how, and when.* *Qui*, or *who*, regards the Patient, *viz.* whether he be weak or strong ; *quid*, or *what is it*, relates to the Malady, whether it be part of a *Granado*, a *Bullet*, or a piece of Wood which is to be taken out : *Ubi*, or *where*, is understood of the Part of the Body where the Operation must be made, and the Place where the Patient is to remain, either in his Bed, or in a Chair ; *quibus auxiliis*, *what Means*, refers to the Instruments, Engines and Medicines proper for the Operation and Cure of the Infirmary : *Cur, why*, directs to the End proposed in taking the best Measures for curing the Patient : *Quomodo, how*, points to the manner of acting, which is what Art directs us ; and *quando*, or *when*, denotes the Opportunity of Time, which is of two sorts ; the one styl'd the Time of Necessity, which will not admit of any Delay, as when the Question turns on stopping a *Hemorrhage* ; and the other is call'd a Time of Election, which admits of the Choice of a proper Day or Season, when there is no pressing Necessity, as in case of *Lithotomy*.

'Tis not sufficient for a Chirurgeon only to have made his Reflections on what we have said, in order to accomplish what his Art

Art requires : He ought also to turn his Eyes first of all on himself ; secondly, on the Patient ; thirdly, on the By-standers ; and fourthly, on the external Circumstances.

The Person of a Chirurgeon ought to be distinguish'd by three *Personal* sorts of Qualities, of which the first are owing to an elevated *Qualities* Nature ; the second to a cultivated Reason ; and the third to a *of a Chi-* great Practice. By Nature, we mean bodily Gifts, good Manners, *urgeon.* and a natural Disposition, which engages us to prefer Chirurgery to all other Professions : With regard to his Reason, 'tis requisite that he be indued with a docile Genius, capable of comprehending a Science of a very wide Extent ; and by Practice, 'tis affirm'd, that he ought to have a great Share of Experience acquir'd by a long Exercise. A Chirurgeon ought also to be *ambidexter*, that is, be able to use both Hands equally, there being some Operations which necessarily require to be perform'd by the left Hand. But he ought, above all, to be his own Judge, and do himself Justice ; that is, when he does not think himself sufficiently able or experienced for a difficult Operation, he ought to let another do it, rather than undertake it rashly.

Three Dispositions of Mind are also requisite to the Patient *Dispositions* who desires to be cured ; namely, a great Share of Confidence, *necessary to* Patience and Obedience ; at the Instant that a Patient makes *the Pati-* Choice of a Chirurgeon, he ought to believe that there are none *ent.* more able than he ; and to conform to that Persuasion, he must avoid harkening to those who propose to him imaginary Secrets, or particular Remedies, and abandon himself intirely to him ; as chearfully rejoicing as though he saw his Health in the hands of him who is endeavouring to restore it to him. Patience is a Consequence of this Reliance ; for the Patient must suffer, without murmuring, whatever the Chirurgeon will do to him, not doubting in the least but that whatever he does hastens the Approach of his Cure ; and that if he puts him to Pain, 'tis what is inevitable, or makes way for some useful Efforts ; nothing, on the other side, being more dangerous to a Patient, than to grow impatient, to dissipate and waste his remaining Strength and Spirits, and torment himself in vain. Obedience is also an Effect of this confident Reliance ; for the Patient ought blindly to follow whatever is prescrib'd him by the Chirurgeon, as knowing that there are no more certain Ways of his Recovery.

The By-standers ought also to be endu'd with three principal *How those* Virtues, which are Wisdom, Fidelity and Discretion : If they are *about them* not wise and prudent, they will frequently inspire the Patient *ought to be* with things prejudicial to his Health ; and, complying with his *qualified.* Desires, grant whatever he asks ; they will fly at all things rough or harsh, and complaisantly yield to every thing that cannot put him to any Pain. If we suppose them to want Fidelity, we cannot depend on any thing we order ; and, instead of advancing the Cure, they retard or hinder it, by altering, and not following, the prescrib'd Rules and Orders : Lastly, if they are indiscreet, they

they will rashly tell the Patient, whatever they shall hear said of his Disease; an imprudent Relation of which may put him in imminent Danger of his Life, as it several times happens. This same Virtue also engages them to keep secret certain Imperfections which they discover, or are told them.

Attention

to external
Things.

The external Particulars, to which the Convenience and Cure of the Patient require our Regard, are the House or Chamber, which ought to be situate in a good Air, distant from Noise, and provided with whatever is necessary during the Cure: The Drink and Diet ought to be proportion'd to the Patient's Condition; withal, very much consulting (on this Head) his Appetite. Too frequent Visits are to be hindred; the Patient is to be comforted and rejoic'd, and Melancholly is to be banish'd as pernicious; Instruments and Medicines must be prepar'd according to the Abilities of the Patient, and an infinity of other Circumstances too long to particularize.

From all these general Precepts, we ought to draw Instructions proper for our Conduct, in order to the due Performance of each Operation in particular, which may contain what ought to be observ'd before, during, and after the Operation.

What ought
to precede
the Opera-
tion.

Before we prepare for the Operation, we must consider the Importance and Possibility of it, which we learn from the Constitution, Functions and Connexions of the Part affected, from the Strength of the Patient, and Circumstances of Time, Place, &c. The Resolution being taken, all things which we judge necessary for Execution ought to be prepar'd; which are call'd the *Apparatus*, in *French Appareil*. 'Tis customary to send to the Patient's Chamber (some time before the Chirurgeon comes) a Servant to dispose all things in order; but frequently, by the quantity of bits of Linnen which they cut, the heaps of Lint which they make, and the spreading shew of numerous Instruments, they strike Fear and Terror into the Mind of the Patient, by giving him a cruel Idea of the Operation which they are going about. I would that the Chirurgeons would not shew themselves to their Patients; 'till the Moment appointed for the Operation; and that all things which they want, were ready prepar'd at their own Houses, or in a Chamber near the Patient, in order to spare him the sight of those Preparatives, which only inspire him with a Horror for those who make them.

What ought
to be ob-
serv'd du-
ring the O-
peration.

What ought to be observ'd during the Operation, is particularly what we call the *Modus faciendi*, or *manner of Performance*; which consists in the actual Practice of all the Rules in the Case under hand which Art directs, discharging the Chirurgeon's whole Duty with Sweetness, Address, Neatness, and nice Exactness. I would then have him affable to his Patient, that he encourage and hearten him, that he participate of his Affliction, and promise to put him to the least Pain possible. A Chirurgeon must be naturally dextrous in Operation, and that Address must be back'd with great Experience in his Profession; whence he should learn how to place his Subject, to chuse the most proper Instru-

Instruments, to invent new ones in particular Cases, and to make use of them in such a manner as shall contribute as much to the easing of the Patient, as the Satisfaction of the Spectators. Neatness does also give a favourable Idea of a Chirurgeon, and is none of the least Circumstances in an Operation: Nice Exactness is also commendable, but it must not be carried too far; that is, we must not, instead of immediately entering on the Operation, handle or turn the Part an hundred ways, and scrupulously trifle, in observing several Circumstances which are not very essential: By nice Exactness, I mean that Lightness, Dexterity, and circumspect Application of the Chirurgeon's Hand, which makes the Patient own that he has extreamly spar'd him; and those present allow, that 'twas impossible for the Operation to have been better perform'd.

Tho' the Operation be finish'd, the Chirurgeon's part is not discharg'd, if he does not remedy the Disorders which it might have caus'd; the principal of which is the Loss of Blood, which ought to be immediately stopp'd by the Means which Art directs, and which I will explain to you in demonstrating each Operation particularly. The Wound must then be dress'd, a Tent or dry Plegets, or those charg'd with some Medicament, according as the Nature of the Malady requires; then a Plaister, a Boulster and proper Bandage: After which, the Chirurgeon is to consider the Situation, in which to place the sore Part, so as to give the Patient the least Pain, and that it may be the least oppress'd, and so as the Matter may be most inclin'd to issue out. And in the last place, 'tis proper for the Chirurgeon to instruct the Nurse, and those about the Patient, in their Duty, recommend Repose to the Patient, and oblige him to set himself at Rest, with the hopes of an expeditious and perfect Cure; and last of all, when he leaves him, to assure him that the Operation, which he has just perform'd, was the only way of restoring his Health.

'Tis not sufficient to have pointed out the Conduct which a Chirurgeon ought to observe in his Operations; 'tis farther necessary, that I put you in mind of several Abuses, or shocking Ways, which ought to be wholly avoided. Some Chirurgeons are no sooner entred into a Patient's Chamber, than they spread the Alarm by their Noise, and an hundred impertinent Questions; or else, being fond of expressing their great Concern, tye their Hair, and shrink up their Shoulders, as tho' the thing they were about requir'd all their Strength; this affrights the Patient, and his Relations: This rustick Way of proceeding is to be condemn'd, as well as the ill-tim'd Ceremonies which others observe amongst those who perform the Operation, presenting one another with Scissors, or an Incision Knife, before the Patient, who by that sees himself miserably liable to fall under the Knife of the least able amongst them. If several have a Right to perform the Operation, the Patient ought to chuse him which he likes best: And when the ordinary Chirurgeon, to whom it justly belongs to set his hand to the Work, believes himself oblig'd to propose

What must be done after the Operation.

Ill Customs to be avoided.

propose it to any other, who by his Rank or Age is above him; that Scene ought to be acted out of the sight of the Patient, who is sufficiently afflicted with his Illness, without being fatigued by these unseasonable Compliments.

Vain Ceremonies.

Nor can I more approve, that at an Operation, all the Chirurgeons present should probe, or put their Fingers into the Wound: These are so many fresh Pains which they put the Patient to, and only prolong the time of his Torment. The Operator ought to examine what he has to do, and not to admit any more to do it at most, than one of the consulting Chirurgeons who are there to assist him with their Advice. There are Chirurgeons who are offended at the Cries of their Patients, and who scold at and chide them, as though they ought to be insensible of the Tortures which they make them endure; these ways of acting are too cruel; a Chirurgeon must have Humanity, and exhort those under his hands to Patience: He must share their Pain; which, though he cannot help putting them to, he must, at least, leave them the Liberty of crying and complaining. I would also have no Persons present at an Operation, but those who are necessary; for a great number of curious or useless Spectators occasions only Trouble.

Chirurgeons must be circum-spect in their Promises.

An Operation is no sooner finish'd, than the Patient and Relations interrogate the Chirurgeon on what he thinks: When his Prudence appears in saying nothing to the Patient which may chagrin him, and not disguising the Truth from his Friends, and those about him. He must not do like them, who by ill grounded Fears reduce their Patients so near the brink of the Grave, that at the very sound of their Voice they are always ready to fall into it. I know some do this Politickly, that if the Patient dies, it may be reported that the Chirurgeon foretold it; and if on the contrary he is cur'd, 'twill be Published, say they, that 'twas he who saved his Life. But on the other side we ought not to take the contrary course, and promise infallible Cures. I am not ignorant, no more than of the other, that those who take this Method pretend it brings them Practice; believing 'tis more natural for a Patient to put himself into the Hands of him that assures him of Cure, than into those, who, with a melancholy Air, set Discourse, and uncertain unwelcome Prognostication, seem to be the forerunners of Death. Both these extremes are Rocks which the Chirurgeon ought to shun, by reason the World is prepossess'd against all these Stratagems, and concludes concerning the Sincerity and Ability of the Operators, only from the Success of the Cures which they undertake. The Chirurgeon must take the middle way betwixt Hope and Fear, shewing yet more of the former than the latter; because the first can have no other than a good effect; but the second is capable of occasioning very dangerous uneasinesses.

The Apparatus to be ready before the Operation begins.

I have already told you, that before the undertaking of an Operation, the *Apparatus* ought to be prepared; by which we understand all sorts of things, without which the Operation

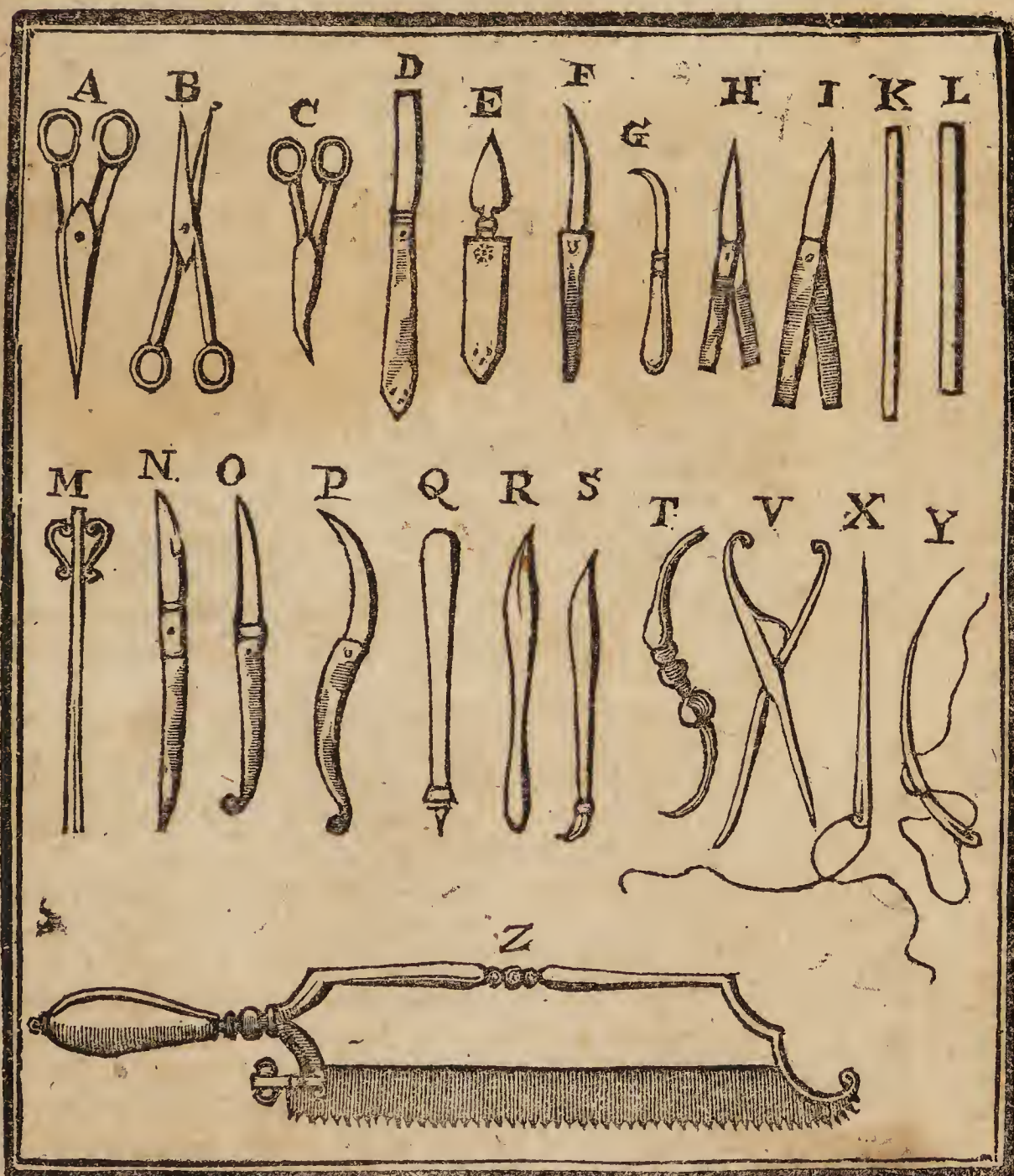
could

could not be perform'd, and which are reduced to six principal Heads, viz. *Instruments, Tents, Plegets, Plaisters, Bolsters and Bandages*. I say the Principals and Universals, for there is an infinite number of Particulars, as *Laquei or Drawing Girdles, Splents, Scamni or Beaches, Boxes*, and other Engines proper for particular Operations, which I shall pass over at present, proposing to Day to shew you what regards Operations in general.

Be not surpris'd if I begin with the *Instruments*, and leave the *Bandages* to the last Place; I follow herein the Order in which the Chirurgeon makes use of them in his Operations; I thought this Method more instructive than any other; I also believ'd I ought to grave these six sorts each in a Plate apart, that you might conceive the more distinct and exact Ideas of them.

Why I begin with the Instruments.

FIGURE II. Chirurgical Instruments.



TIS impossible to carry on the Practice of Chirurgery without Instruments: The Ancients have transmitted to Posterity several Draughts of them, which we see in their Books; but we may say, to the Praise of the Modern Chirurgeons, that the Instruments in use at present, are more convenient and not so coarse; we have not been content with retrenching only some old ones, which were found useless and too rough; but also polish'd and perfected those which are retain'd in use, and invented many others.

We regard the Instrument as a second Cause, which acts or helps us to act, being directed by an industrious Hand; so that the Hand and the Instrument are two efficient Causes, without which an Operation could not be perform'd; but with this difference, that the Hand is the Principal, since 'tis that which produces and regulates the Motion of the Instrument, which is but a subordinate Cause.

Reason and Experience ought to learn us the use of these Instruments; the first directs us to the choice of the Instrument that is most proper to the end we propose; and the second rendering us dextrous, emboldens us to handle it: Nothing encouraging an Operator more in the use of Engines, than the successful Trials he has made of them.

Amongst the various Engines that may be used in Operations, there are some which are necessary to the Execution of them, and others which contribute only to the better accomplishment of them: The number of the first, which serve to re-unite divided parts, to separate contiguous ones, to extract exotick ones, and to make several Dispositions, &c. is innumerable, and frequently the assistance they afford us is such as we could not come at from Medicaments, nor any other Means: For how is it possible without a *Probe* to make the Urine pass out of the Bladder, when it has lost its Course? Or to couch a Cataract without a Needle? The second, which are such as Beds, Cushions, or Benches, which facilitate the Operations, are also very numerous, and ought not to be neglected, since the use of them conduces to the Perfection of the Work.

After having treated of Instruments in general, we ought to examine them in particular: Those which you see engraven on this first Plate, are useful in almost all Operations; therefore the knowledge of them ought to be preferr'd to the first Place, and accordingly I shall begin this Demonstration with them.

A
Scissars. *Scissars* are the Chirurgeons most common Instruments; the first Pair, mark'd A, which I represent to you, is stronger than the rest, and are those used to cut Bands, Bolsters, Plaisters, and other grosser things, to which Services they are also proportion'd.

B
Incision Scissars. The second Pair, B, are finer, the Blades, or cutting Parts of them, are thinner and longer; and they are called *Incision Scissars*: The Chirurgeon ought to keep one Pair for that Operation only; they have a small Button at the end of the Blade, which is thrust into

into the Wound, to prevent its pricking, irritating or hurting the Part affected. The steel'd edges of these *Scissars*, ought to be fine and very sharp, that they may cut true and quick, and consequently put the Patient to the less pain.

The third Pair, C, are called bent or crooked *Scissars*; and the two Blades are bent in order to fit them for Incisions, where the straight ones cannot be used; they have also a Button at their external point, which is always that which is thrust into the Wound which is to be dilated, 'Tis proper to hint, that Chirurgeons ought not to make use of the same *Scissars* which are used by Women and Taylors, who thrust their Thumb into one of the Rings and their fore-Finger into the other, but they should clap the annular or ring Finger into the second Ring, instead of the fore-Finger, which renders them more dextrous, and gives them more strength, by reason that the fore and middle Fingers rest on the Branches or Handle of the *Scissars*, which they accordingly guide.

The *Razor*, D, is one of the most ancient Chirurgical Instruments. It was formerly made use of in several Operations to make Incision and Cut, but not being firmly fix'd in its handle, and there being other more convenient Instruments, 'tis now grown out of any other use than that of shaving hairy places.

Tho' the *Amphismela*, or *Dissecting Knife*, E, serves particularly in Dissections, it may yet be useful in many Operations; as in Amputation, where we are oblig'd to cut the Flesh and Membranes betwixt the two Bones of an Arm or Leg, before Sawing it. This Instrument cuts on both sides, and hath a Haft of Ebony or Ivory, which, being thin and flat to its extremity, serves to separate the membranous and fibrous Parts in anatomical Preparations.

The other *Dissecting Knife*, F, has a back, and is not sharp on both sides; its blade is curve, and it is very proper to separate Flesh from Bones, in embalming or preparing of Skeletons.

The *Spider*, G, is another necessary dissecting Instrument, so call'd because at its end it had two crooked Points like a Spider's Foot; but one of them being found uselefs, 'tis now made with no more than one, which serves for a Servant to hold a Vessel or Ligament to be anatomis'd; and on occasion, in some Operations, as in that of the *Bubonocoele* or *Rupture*, a flatted or blunt one is used, for fear lest by pricking some of the sensible Parts, it should excite Pain or Convulsions.

The *Lancet*, H, is of all Instruments the most necessary to a Chirurgeon, because without it he cannot perform the most common Operation in Chirurgery, I would say *Phlebotomy*; and using it every hour he is obliged to be provided with several. Some will have them very narrow pointed, others a little broad; the former assert, that the first sort may be better guided in the Vein, and that by raising them more or less they can make the Orifice as they please; and the other affirm, that with a broader Lancet they make the Orifice large enough at first, without being oblig'd

to raise their Instrument, by advancing it farther into the Vessel, and that they avoid giving the Patient the pain which is not so much caused by the Punction as that Elevation. Those I make use of are a middling sort betwixt both, and require but a small Elevation, and the pain they give is very light; they are call'd *Lancets with a Barley-corn point*. Its handle is generally of Tortoise Shell, and ought to be very thin, and separated into two Parts, for the more commodious cleaning of it: Tipping them with Silver is a mistake, which renders them too clumsy for a Chirurgeon to guide them with that nicety which Bleeding requires.

I
The Abs-
cessse Lan-
cet.

The other *Lancet*, I, is much larger than the former, and is design'd for long and deep Dilations, which cannot be made with a bleeding Lancet; the Point ought not to be too fine, nor the Edge too keen, lest they should be blunted when used in cutting either Flesh or Skin which proves somewhat hard. Formerly these Lancets were sharp at the end, and broad in the belly, resembling an Olive Leaf; but at present they are made of the same breadth from the Belly to the Haft; the convenience of which form is, that we can hold them faster, and they are more steady when we use them. As for their other Qualifications, they ought to be very flat and very well polish'd, that in the Vein they may make the smallest Orifice possible, and the easiest to be clos'd.

K
A Probe.

The little Instrument, K, is called a *Probe*. 'Tis round and even all over, except at one end where it has a small Head, which prevents its pricking the Wound which it searches. There are of several lengths and breadths. 'Tis by the Probe that we discover the course and depth of a Wound; 'tis the Probe that assures us of the Existence of exotick Bodies, whether the thrust penetrated, or the Bone is discover'd: To conclude, 'tis the Probe which gives us the first light which we want in order to proceed to the Cure of the Wound.

L
A flat
Probe.

The other, mark'd L, is call'd the *flat Probe*, and is of great use in places where the round one cannot enter; discovering to us when there are Clefs or Cracks in the Bones, and the *Pericranium* is separated, whence 'tis not less useful than the former.

M
The hollow
Probe.

The third, M, is a *Probe* channel'd and hollow'd like a gutter; having for almost its whole length a Cavity like a Channel to guide points of the Instruments in Incisions; for which end 'tis larger and stronger than the other two, and the two Ears at the end enable the Chirurgeon to hold it fast in his left Hand when he uses it. These Probes are commonly made of Iron, but 'twould be better they were Silver.

N
The Incisi-
on Knife.

The *Incision Knife*, N, is an Instrument very much in use, and of which there are several sorts: This here describ'd cuts all on one side; but on the other, which is call'd its Back, it cuts no farther than the middle; it may be folded backwards and forwards like an *abscessse Lancet*, instead of which 'tis sometimes used: 'Tis proper for several sorts of Incisions, particularly those to be made

in the Head. Every Body knows, in the use of these Instruments, that by the Fingers of the Right Hand they must be held by the Blades which turn on their Handles, which serve as a Counterpoise to the Hand during its Operation, and as sheaths to the Blades at other times.

The *Incision Knife*, O, is call'd *Streight*, because it does not fold backwards like the other, and the Blade remains rectilinear with the Haft like a Knife; it also cuts on one side only, being flatted on the other: Sometimes a small knob of Wax is fix'd on the Point, to prevent its hurting the Patient, when the Operator is oblig'd to thrust it into a Wound: This Instrument is very useful to the Military Chirurgeons who are every moment obliged to make Incisions in all parts.

The other, P, is a *curve, crooked or bent Incision Knife*, shap'd like a Crescent, its Edge innermost, and Back on the outside: There are small, middling, and very strong Knives of this sort; the last of these three are called *crooked Knives*, and are design'd for great Operations; the crooked are never chosen but where the streight will not serve, as when in the Operation of *Bubonocoele*, we are obliged to dilate the Rings of the *oblique descending Muscle*, when we guide the point of the Incision Knife thro' the Channel of the hollow Probe, when 'tis needless to put a Button at the end of the Blade.

The *Spatula*, Q, is a necessary Chirurgical Instrument for the spreading of Plaisters, and extending of Unguents on Plegets: It ought to be strong, broader at one end than the other, flat on one side, and half round on the other: Those Chirurgeons who are somewhat nice, have them always of Silver rather than Iron, which is never so perfectly clean, and which fouls their Hands more than the other.

The Instrument R is call'd the *Myrtle Leaf*, or *Myrtle Leaf pointed Knife*, from its resemblance of that Leaf; others have nam'd it the *Demy* or *Half-Spatula*, because its shape is very near that of a *Spatula*; but yet is pointed, not so streight, and larger. Its use is to cleanse the outside of a Wound; 'tis shap'd like an Ear-picker at its extremity, which serves to extract exotic Bodies got into the Ears, or small Stones remaining in the *Ureter*.

The other *Myrtle Leaf*, S, much thinner than the Precedent, is half-edg'd; it is somewhat bent at the end like a Tooth-pick. Besides its use in common with the first, it also serves in Dissections to separate the Membranes from the Fibres. I have always successfully used it in the Operation of *Bubonocoele*, where I prefer it to cutting Instruments, for fear they should wound the Intestin.

The *Elevator*, or *Levitor*, T, is an Instrument which derives its Name from its use: You will see several sorts of it in pursuit of these Operations, but this is crooked at both ends, one of which is square, and the other round, that the former may enter into long and broad Orifices, and the latter into round ones: They are both tooth'd or jagged within side, that they may not slide under the Bone which they are to raise. This Instrument sometimes serves for the

the Extraction of exotick Bodies, as Balls, or Splinters of Grana-
nadoes; but is chiefly proper, to raise up a piece of Bone fallen on
the *dura mater*.

V
Forceps.

There are several sorts of *Forceps* which derive their Names
from the Parts which they resemble, as *Ducks-bills*, *Crows* or
Cranes-bills, and each of them have their different uses, as we shall
shew; But I shall here trouble you with no more than a pair of
Forceps, V, which is the commonest of them all, and which Chi-
rurgeons ought to carry with them in a Case where-ever they go.
They are better of Silver than Steel, because not so apt to rust.
The upper end of this pair is to take out a Splinter of Bone, or
pull up Hair: They have a Spring which keeps them continually
open, and the inferior Branches being longer than the superior, are
very convenient to raise the Pleges above the Sore, or put them
on.

X
A streight
Needle.

The *Needle*, X, is very much used by Chirurgeons, and that on so
many different Occasions, that they are obliged to be provided with
all its several Sorts, of which I shall treat more at large in my De-
monstration of *Sutures*: This here express'd is a streight sharp-
pointed Needle, whose two sides do a little encrease in breadth,
and are sharp to the middle, the rest round, and its Head provided
with a large Eye to run the String through. Its use is to sow up a
Body in publick Anatomical Preparations or Embalmings.

Y
Crooked
Needle.

The *crooked Needle*, Y, is coarse and strong, for it frequently
bends or breaks, especially when used to sow the Skin of a dead
Body, which is much harder to pierce than that of a living. Its
use is the same with the streight one; besides which 'tis abso-
lutely necessary in the *Gastrorhaphia*, or Suture of Wounds of the
Belly.

Z
A Saw.

The *Saw*, Z, is an Instrument common to Chirurgeons with
other Artists; but the Chirurgical one being always made by very
good Cutlers, has the advantage above all others, on account of
its neatness, niceness, and the quick and exact separation which
it makes of the Parts to which 'tis applied. It ought to be small
and light, that it may be handled with more freedom, and hath a
handle to hold it the firmer: The Blade must be exquisite, and the
Teeth very sharp, that they may saw with the greater ease, and
in the least time possible divide the Bone of an Arm or Leg, when
an *Amputation* is to be made. We cannot dispense with the use
of the Saw in Opening of a *Skull*, the Embalming of a Head, or
Demonstrating the Brain.

The small number of Instruments which you have just seen,
comprehends properly only those which are called General; be-
sides which there are a great many Particular, which I have not
represented in this Table, because I intend to shew them to you
in the respective Operations in which they are proper.

FIGURE III. Of TENTS.



Tents ought not to be last consider'd in the Composition of the Apparatus, since they are requir'd in so many Operations, that a Chirurgeon ought to be instructed in whatever relates to them, which may be reduc'd to three Heads, which we will immediately examine, viz. the Matter whereof they are composed, their Shape, and Use.

I find five sorts of things of which Tents are made; out of which it belongs to the Chirurgeon to chuse that which best suits his propos'd End; they are then either of Lint, Linnen, prepar'd Sponge, Silver, or Lead.

The Tents of Lint are the easiest and softest, and less fatigue the Sore than the others: They are made use of to convey a Remedy to the bottom of the Wound, and imbibe the liquid or corrosive

rosive Matter, and, by that Means, prevent the Excrement's injuring the Part.

Those of *Linnen* are generally the roughest of all; they are long and hard, shap'd like Nails, whose heads are thicker and broader than the rest, to prevent their entring the Cavities of the Breast or Belly, where they are frequently made use of.

Sponge is said to have been prepar'd, when it has been boil'd in a Liquor in which is Wax; after which, whilst hot, 'tis bound with a small twisted Band, to give it the form of a *Tent*. When a Wound is to be dilated, one of these Tents is put in, which so swells with the Humidity of the Ulcer, that 'tis hardly to be got out again: This is proper on some occasions, but the continual Use of them would be very dangerous; by reason, that in their swelling they grow so hard, that, by their Compression, they may render the Parts which they touch *Schirrous* or *Gallous*.

Silver Tents are *Pipes*, which, like a Tube, are pierc'd according to their whole length: They are made several ways; those which you see represented here, and which I will immediately explain, serve to convey Matter outwards contain'd in great Cavities; and have this Conveniency besides, that with a small *Linnen* which stops them, the Patient may be dress'd without removing them out of the Wound.

There are also some made of *Lead*, of the same Shape and Use as those of Silver, and by some Persons prefer'd to all other Metals, as being the most kindly to Men, since we have seen Bullets of it remain a whole Life in the Bodies of several Persons without incommoding them; but besides that, these Balls could not remain so long there without hurting them, were it not that their Figure adjusts it self to the Places where they are lodg'd, and that they were found to be without the Action of the moving Fibres, and the Course of the Liquors; and I believe, that a Silver Tent would less hurt the Patient, because it would better retain its Shape, as being of a harder Substance; besides which, the Separation of *Metallie Corpuscles* is less to be fear'd by the Corrosion of the Juices. The Convenience of Lead is, that the Chirurgeon may himself shape his Tents, when no Silversmith is at hand to make them of Silver, or when the Patient's Circumstances are too mean to bear the Expence.

Amongst all the Tents which cannot be described by a better Resemblance, than that of round-headed Nails, there are *short* and *long*, *small* and *large*, *flat* and *round*; both the one and the other are always proportioned to the shape, breadth and depth of the Wound, whence their particular Form cannot be determin'd, because it depends on the Chirurgeon, who ought to adapt them to the end for which he uses them.

There are four Advantages which accrue from the use of Tents: The first is to convey the Remedy, and keep it applied to the deepest part of the Wounds; the second, to absorb the corrupting *Sanies*, which easily filtrates through the Pores of the Tents, by which the Air is also rarified by the heat of the Part: The

third

third is to keep the Wound open, and prevent the Lips re-uniting before the bottom is fill'd ; and the fourth is that of drawing forth the Matter which ought to come out, whence they are always plac'd at the lowest part of the Wound.

Though these Advantages of Tents are considerable, there are yet some Chirurgeons who condemn the use of them: They urge first, that in Wounds and Ulcers all Means which occasion Pain ought to be avoided, lest they be follow'd by Fluxion and Inflammation; but according to them the Tent gives Pain, therefore ought not to be used. They add, in the second Place, that by their hardness they fret and bruise the Flesh; which being depriv'd of the Skin, is very tender: Thirdly, they alledge, that Tents stopping the Mouth of the Wound, keep in the *Sanies* which corrodes and widens it: And in the fourth Place they assert, that whatever hinders the closing of the Wound is to be avoided; but Tents put into it, prevent its Re-union; the use of them, conclude they, ought therefore to be retrench'd.

But these four Arguments are easily answer'd: As for the first, we agree, that, above all things, the Patient ought to be exempted from Pain as much as possible; but in order to that, no more is necessary than to make the Tents small, equal, and so even that they may not hurt at all. For the second, I don't apprehend how Tents can make any Contusion in a Wound; for they ought to be so soft as to yield easily to the natural Course of the Parts. Against the third, I am persuaded that a Tent drying up the *Sanies*, prevents the Wound from growing Ulcerous and Cavernous; and if there happen to be so much, that the Tent, or the *Plumaceoli* or Plegets cannot absorb it all, more frequent dressing is necessary; or the Tent must be so contriv'd, that the Superfluity of this virulent ferous Matter may run out of the Wound. To answer the fourth Reason, I say, that if we keep the Tents too long in the Wound, we prevent its Re-union; but they are put in at first to draw out the exotic Bodies, the clotted and extravasated Blood: Next, when 'tis regulated, and the Flesh is come to a beautiful Vermillion Colour, the Tents are taken out, in order to leave the Wound to cicatrize. Thus the Resolution of the Question depends on knowing the proper time when to use, and when to reject them.

Let's then now examine the Tents which you see Engraven here; the first, A, is very little, 'tis made of Lint rolled up, so that its Head is of the same Fashion with the rest, 'tis used in the opening of small *Abscesses*, being accompanied with a small quantity of some *Mundicative*, to cleanse the Flesh corrupted by the continuance of the Matter there.

A
Small Lint
Tent.

The second, B, is thicker and longer than the precedent, and is made of Lint, with a Head to prevent its sinking deeper than is intended; 'tis soft that it may not hurt, and yet substantial enough to make its way, and keep the Wound open; 'tis usually wetted in some Liquid, or cover'd with some Unguent; 'tis very proper for several Wounds, particularly those which are called Green.

B
Midling
Lint Tent.

C
Large Lint Tent. The third, C, is also of Lint, and is much larger than the former, and of an equal thickness throughout its whole length: The dexterity of the Chirurgeon clearly appears in the making of these Tents, for all of them don't equally succeed: They are apply'd to several Wounds, and particularly are thrust into the *Anus* after the Operation of the *Fistula*.

D
A Linnen Tent. The fourth, D, is a Tent made of several small bits of Linnen rolled over one another; the Point is blunted, and somewhat unspun, or pulled out, that it may not offend the Parts which it must touch; and tho' it has a large Head made of the same Linnen, it hath always fasten'd to it a Thread long enough to hold it, in case it should fall into any Cavity, it being used in Sutures of the Belly; 'tis apply'd to the lower part of the Wound, in order to keep up a continual issue of the Matter.

E
The Great Pipe. The *Great Pipe*, E, is, as well as the following, of Silver, and has two small Rings on the two sides of the Head, thro' which is run a narrow Ribbon to keep it fast in the Wound; and tho' 'tis bored from one end to the other, there are besides two little Holes at its interior Extremity, to let the Urine or Matter run off, when the Membranes of the Bladder, the thin Skins, or Clots of Blood entering at that end, stop it. This Pipe is chiefly made use of after *Lithotomy*, or the Punction of the *Perinaum*,

F
The Flat Pipe. There is another, F, which is called the *Flat Pipe*, by reason it has at its Head a little round Place with two little Holes, thro' which a Tape or Ribbon is run: It is used in an *Empyema* or *Paracentesis*, in which case its preferable to those with Rings, the Matter and Water being better retained by a Plate apply'd exactly to the Skin around the exterior Orifice of the Wound which is made.

G
Flat-Pipe. That marked G is a *Flat Pipe*, provided with a Plate as well as the former, from which it differs only in its Body, being Oval like a Cylinder, flattened on the sides, whereas the precedent is as round as a common Cylinder; and 'tis requisite it should be so, in order to serve when such Subjects occur as are so closed, that we cannot dilate an Orifice wide enough to admit a round Pipe.

The Pipe, H, stands bent, and has also a Plate intended for the same use with that of the others. The Body of this Pipe is bent, in order to adapt it to such Wounds as will not properly admit the use of the streight one.

I
A small Pipe. The last, I, is a very small Pipe with two Rings at its Head; and the End, which is to enter the Wound sideways, has two Holes, the one bored above the other, for the Passage of the Air which enters by the Mouth after the Operation of *Bronchotomia*, for which this Instrument is particularly design'd.

If I here rank the *Setons* amongst the number of Tents, 'tis because both are used to the same intent; and that the effect of the latter has a great Affinity with that of the former.

K
Seton. What we call a *Seton* is a *small String* run thro' a Wound from its beginning to its end; this String, K, was formerly made of Horse-Hair; but being found to incommode and cut the Wound,

some

some made use of such Cotton Wicks as are put into Lamps, and others of several Hempen Threads joined together; but for my own part, I find nothing better than narrow Linnen Tape, for Linnen agrees well with Wounds.

To run the *Seton* thro' the Wound, requires the small Instrument L, which we call a *Seton Needle*: 'Tis round, pointed like a Clove of Garlick, that it may not prick the Wound in its Passage; it has a large Eye in the Head, thro' which a *Seton* is drawn; and 'tis also requisite that it should be very long, in order to run thro' from the beginning to the end of a Wound, which pierces the Thigh from one part to the other.

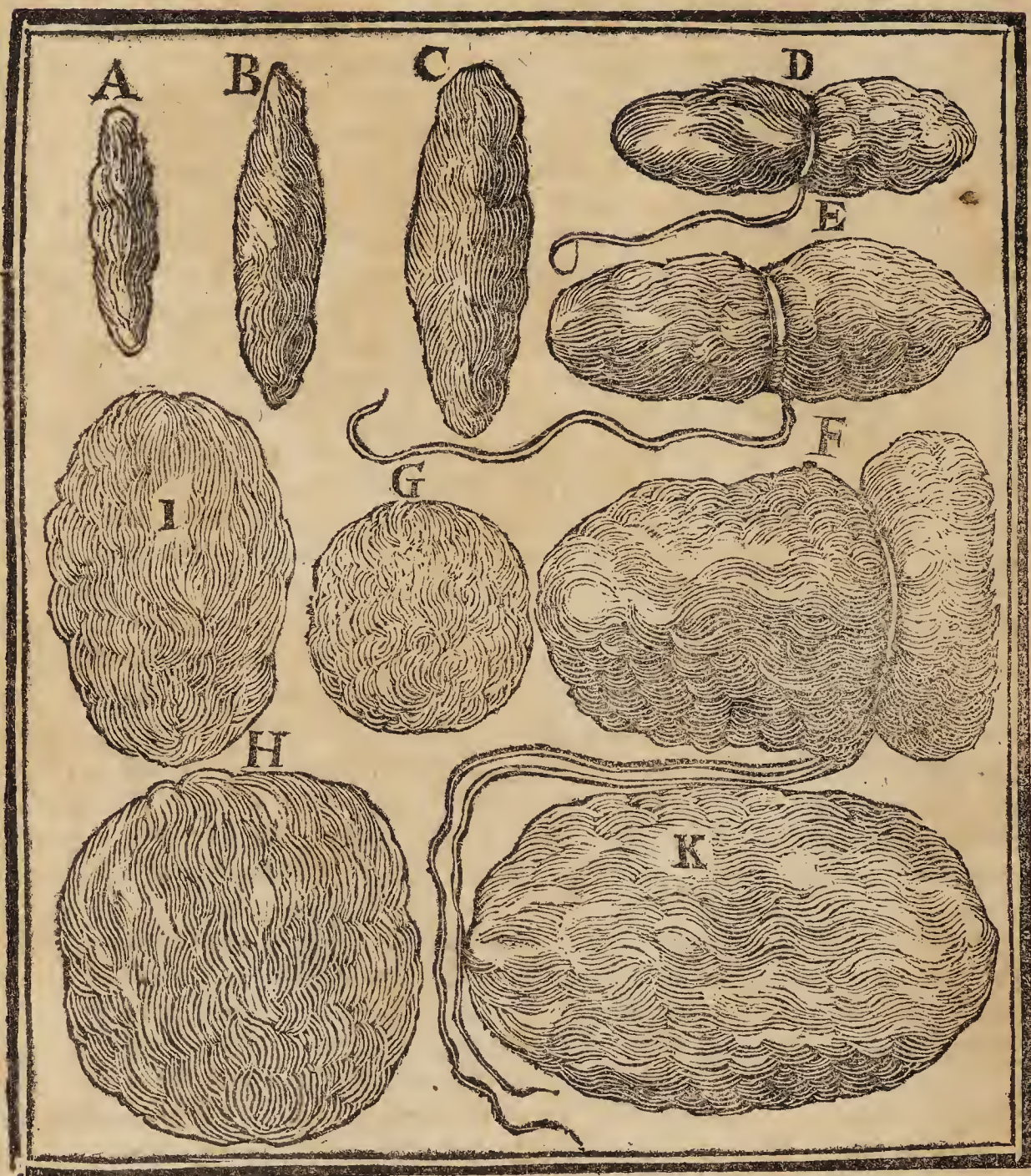
The *Seton* is of great use to carry the Remedy all along the Wound, and ought to be very long, by reason at each Dressing that part of it which has before been in the Wound must be drawn out, and succeeded by a second cover'd with Unguent, as far as is necessary to fill the whole length of the Wound; after which the Chirurgeon cuts off that which came out of the Wound, and brought the Matter and Pus with it. When all the *Seton* is used, and 'tis requisite to use more, it must not be run thro' with the Needle again, but fastened to the end of that which has been drawn thro'. It should be observed, that the *Seton* must enter at the upper part of the Wound, and come out below at that end where the issue of the Sore is.

Some object, that the *Seton* is an exotic Body continued in the Wound, where the use of it ought to be forbidden: But having all the Advantages of Tents, which are to prevent the entrances and issues of Wounds closing before the middle; of conveying Remedies to their utmost Profundity, and easily drawing out the noxious Matter, &c. Cases continually occur when we cannot dispence with the use of them. The Wound being cleansed, the *Seton* is drawn out, and then it heals perfectly well.

The time which *Setons* ought to remain in Wounds cannot be positively prescrib'd, but depends on the Chirurgeon's decision, pursuant to the condition in which he finds the Wound: Some keep them longer in to purge and cleanse the Wound than others, and they ought not to be drawn so soon out of a Gun-shot Wound, as out of one which happens by the Point of a Sword; but Care ought to be taken that they be not left in too long, for that will render that Part *Fistulous* and *Callous*.

That which I here call the *Seton*, is the Cotton or String which is introduced into, and left in the Wound some Days. I don't at present treat of the Operation of the *Seton* in the Neck, which I shall shew you in its Place.

FIGURE IV. Of PLUMACEOLI, or PLEGETS.



When, after an Operation, a Wound requires a Tent or Pipe, one of them just now describ'd is put into it; but in Wounds where there is no occasion for them, small Plegets, which are Stopples of Lint, are made use of to fill the Cavity, and Plegets to cover it.

Whence the word *Plumaceoli* is derived. The Word *Plumaceolus* derives its Original from the Ancients making use of Feathers sowed betwixt two pieces of Linnen, which not only imbib'd the Matter, but were very proper to defend the Part from Cold, which is always an Enemy to Wounds and Ulcers, by reason that shrinking up the Fibres, which are very tender,

tender, it breaks their Order, and obstructs their Motion, by which they tend to restore themselves to their pristine State.

We find, that in the first Ages a sort of *Mushrooms* were made use of to dress Wounds; and in after Times, *Wicks* and *Tow*; and in other Ages, *Spunges*: But at present, since *Linnen* is grown more common, the use of these other Substances is left off, and we use only *Lint*, which is undoubtedly preferable to all the Inventions of the Ancients for these Purposes.

Lint is made of *unspun* or *pull'd-out Linnen*; to which purpose the Linnen is torn into several small bits, from whence the Threads are drawn out one after another: The Cloth ought not to be too coarse, nor too fine; neither new, nor too much worn: The first makes a harsh *Lint* which hurts the Wound; too much Time is spent in pulling the second; and the third, besides the fineness of the Thread's rendring it apt to conglutinate, those of new Linnen continue too strong and harsh; and the fourth yields a dusty downy *Lint*. The midling sort is to be chosen, and above all that which is clean and well wash'd.

Of this *Lint* are made *Plumaceoli*, that is, *Plegets*; and *small Plegets*, which retain the Names bestow'd on them by the Ancients, though the Matter of them be alter'd. They are shaped proportionably to the Wound, in order to apply them dry, cover'd with Unguent, or dip'd in some Liquid, pursuant to the Intentions for which they are used.

The *little Plegets*, and the great ones or *Plumaceoli*, have five *Uses of the* important Uses. First, they serve to stop the abundant Flux of *little Ple-* Blood from the Wound; for which reason, at the first Deligati- *gets, and* on, we commonly put nothing into the Wound but *Lint*: Second- *the Pluma-* ly, by their Means a Wound is kept dilated, when any exotic Bo- *ceoli, or* dy or Splinter of Bone is to be drawn out. In the third Place, *great ones.* they convey the Medicines to all the Parts of a Wound; besides, they draw out all the virulent Matter and sharp Serosities which run in the Wound. Lastly, they guard the Wound from the Impressions of a cold Air, or such an one as is charg'd with noxious Qualities; which last Use is peculiar to the flat *Plegets* which cover the Wound.

A sort of *Lint* is prepar'd, which, like the *Cilician Matches* or *Corrosive Wicks*, corrodes and consumes the proud Flesh which grows over *Lint.* Wounds and Ulcers. To which purpose several bits of Cloth are wash'd and scented with Sulphur, Nitre, and other such like Ingredients; after which they are reduc'd into *Lint*. We also make use of *Lint* which is scraped off the Linnen with a Knife: This *Lint* is very fine, and its principal Use is to dry up a Wound, in order to dispose it to cicatrize.

Some *Plegets* are made like Stopples; these are *small Plegets*; others are flat, and retain the Name of *Plumaceoli* or *Plegets*; the first fill the Wound, and the second cover it; the former are commonly shaped like an Olive, and of the latter some are round, others oval, as those represented in the Print which I shall now explain.

A, B, C. The three first *small Plegets*, marked A, B, C, which you see, and one of which is lesser than the rest, the other middle-siz'd, and the third larger, are made of *pull'd Lint*, and shap'd like *O-lives*. When they are intended to dilate a Wound, they are made harder; but when they are only design'd for the Conveyance of Medicines they are made soft, that the Part may not be rashly expos'd to fretting and contusion. In case the Wound is not large, the least sort is used; and when it is large and deep, the biggest are apply'd: but 'tis always better to fill it with a greater Number of the least, because they fit better.

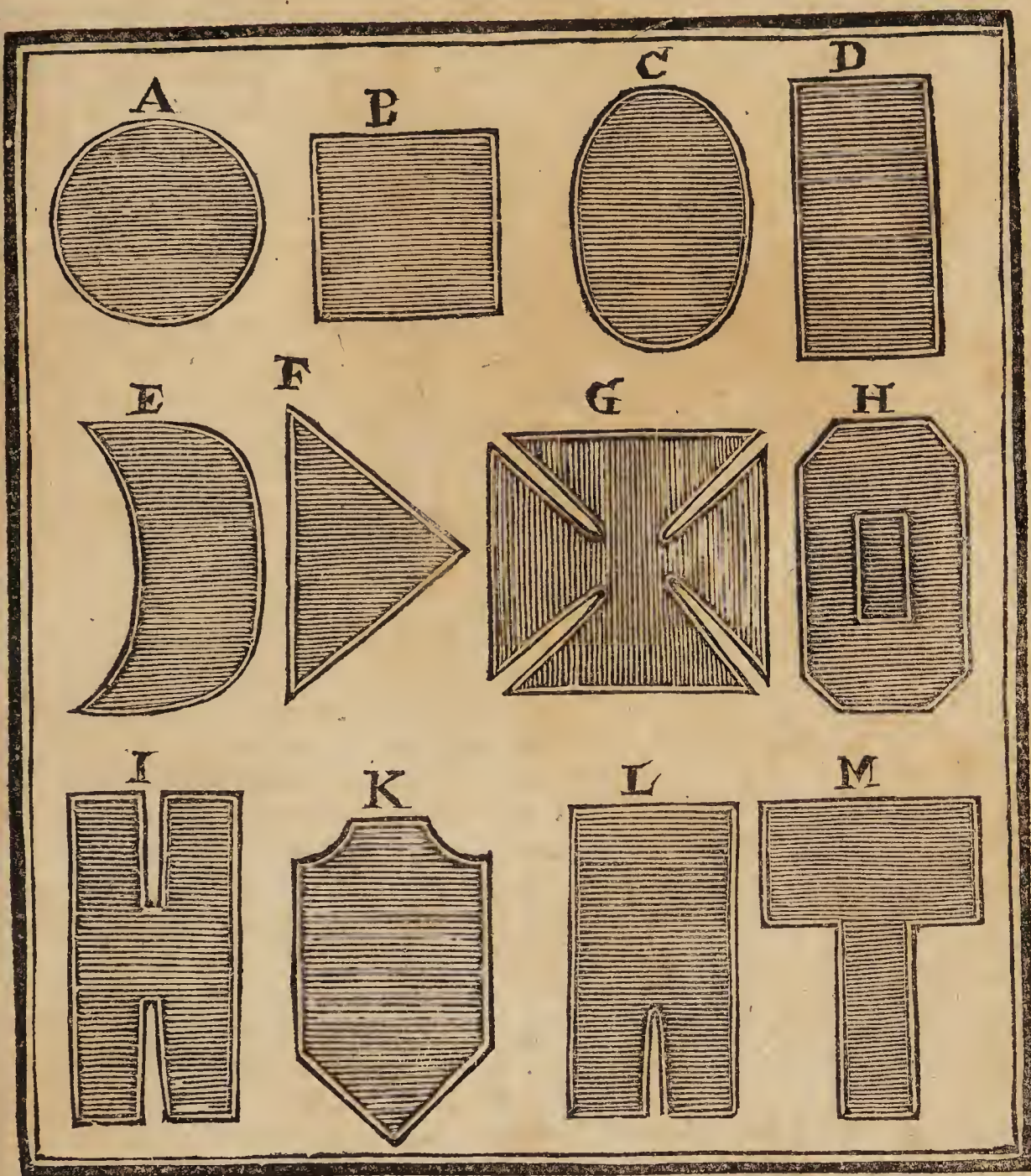
D, E. The two others, D, E, are of the same Shape with the former, but thicker; they are tyed about the middle by a Thread four or five inches long, and are the *Stopples* which are first of all thrust to the bottom of a Wound, or large *Imposthume*; we usually tie no more than the two or three first, it being unnecessary to bind the rest, because that being put in the last, they always come out as soon as we begin to draw out the Precedent which they cover: Thus the Thread serves to draw out the *Plegets*, and discover whether there be any more in the Wound, since those, to which its other end is fastned, are the last which are drawn out.

F. The great *Stopples*, F, is surrounded with a double Thread towards the head, because being fitted exactly to the size of the Wound, it frequently happens that it swells very much, and that the Wound presses it so close, that it requires a strong Thread to draw it out: 'Tis principally us'd after the Operation of *Bubonocoele*, to stop the Aperture made in the Rings of the Muscles of the *Abdomen*, in order to return the *Epiploon*, or the *Intestins*.

G, H. These two *Plegets*, G, H, are round; the one little, and the other larger, according to the Places to which they are to be applied; they are not very thick, but they require Use and Dexterity to make them well.

I, K. The two last, I, K, are large oval *Plegets*, which are frequently us'd, and several are plac'd next one another when the Wound is vastly large; and when a Chirurgeon makes ready his *Apparatus*, he ought to prepare a much larger number than he seems to want, because frequently he is obliged to cram in several, one after another, and especially when he is to stop an obstinate *Hæmorrhage*, which requires a considerable Compression of the Arteries and Veins whence the Blood proceeds; which is commonly done most easily by these Means, which fasten the Ligatures which are thought proper to be made about the Vessels, and retain the *styptic Powders* and Waters longer apply'd to the Apertures. This may suffice to give you an Idea of *Stopples* and *Plegets*; Let's now proceed to treat of Plaisters.

FIGURE V. Of PLAISTERS.



Plaisters are Compositions somewhat more solid than Unguents or Cerats, and which are mollified, in order to spread them on Linnen or Leather; after which they are externally apply'd to all parts of the Body. The Word *Emplastrum* is deriv'd from the Greek *Emplatein*, which signifies to form or fix on something, and they are apply'd to the Skin, which serves as their Mould. The knowledge of Plaisters turns upon their *Matter, Shape and Uses.*

Etymology of the word Emplastrum, or Plaisters.

By the *Matter* we mean two things, either the *Stuff* of which they are made, or the *Composition* with which they are cover'd. For those applied to tender and sore Parts, as the Lips and Eyes, we make use of *Taffata's* and *fine Linnen*. For the robust Parts,

as

as the Arms or Legs, we use *course Linnen* or *Fustian*, and sometimes *Leather*. As to the Composition, 'tis difficult to particularize, Plaisters being compos'd of all things which we find on the Earth; *Wax*, *Pitch*, *Oyls*, and *Greases*, are the most common Materials; to them are added *Litharge*, *Ceruse*, *Gumms*, *Liquors*, and an infinite variety of *Powders*, pursuant to the nature of the Plaister intended, and the Properties requisite, with regard to the particular Cases in which they are used. Of these different Drugs, some compose the Basis of the Plaister, and give it a Body; and others are added, in order to distribute and impart their Virtues to it, which pass from thence to the Part to which 'tis apply'd: The Mixture and Coction of all these Ingredients form a compleat *Salve* which easily sticks, and which may be long kept in Rolls, without any diminution of its Virtue. This sort of Remedy, to which is allow'd a moderately hard Consistence, was contriv'd by the Ancients to foment, mollifie or fortifie the Parts by Medicaments capable of staying on them several hours, nay, several Days without corrupting. When this Matter is to be us'd, 'tis held near the Fire, in order to spread and extend it on some soft Stuff.

Figure of
Plaisters.

The Shape or Figure of Plaisters is so much varied, that 'tis impossible to mention all of them: We reduce them only to two general sorts which are streight and crooked: Under the first sort, are comprehended those Plaisters which are bound by right Lines, as the oblong and square ones; and under the second Species are those which have a curve Circumference, as the circular, oval, and those shap'd like a *Crescent*; both kinds are again divided into small, middling and large, accommodated to the figure and size of the Part on which they are to be laid. Further, there are universal ones which are proper for all Parts of the Body, as the round and square ones: Particular ones, which are adapted to several Parts, and not to the whole, as those shaped like the *Maltese Cross*: And thirdly, there are those call'd peculiar ones, because they are solely applicable to a particular Part, as to the *Peritonaum* in *Lithotomy*.

Plaisters are necessary, in general, to retain the other Remedies, either in the Wound, or extended on its Surface; and in particular, to impress the Virtues of the Medicaments of which they are compos'd: With regard to this last Use, some dry and cicatrize a Wound as *Diapalma*; others concoct and digest the Pus or Matter, as *Diachylon*; others empty and cleanse, as the *Mundicative*; and others mollifie and dissipate, as *Diabotanium*; and so of the rest.

These twelve Plaisters, engraven on this Plate in as many different Shapes, for Neatness-sake, ought all of them to have, about their Circumference, an Edge of the breadth of one or two Lines left uncover'd with the Composition.

The first, A, is *Circular*, the commonest and most frequently used. A, Round
Plaster.

The second, B, is *Quadrangular*, of which Shape there are both large and small. B, Square
Plaster.

The third, C, is *Oval*, that is, of a curve Figure, longer than it is broad: 'Tis applied to several Wounds, which are longer than they are broad, and 'tis knotch'd by the Scissars, in order to accommodate it the better to be laid on over the Plegets. C
Oval Plai-
ster.

The fourth, D, is *Oblong*; 'tis cut in this Shape when intended to wrap round an Arm or Leg in a Fracture: Several lesser of the same Figure are prepared to wrap round a Finger. D
Oblong
Plaster.

The fifth, E, shap'd like a *Crescent* or *Half-Moon*, is proper for a *Fistula* in the *Anus*, when 'tis on one side: Very small Plaisters of this shape are also apply'd to the Eye-brows. E
Crescent
Plaster.

The sixth, F, is a *Triangular Plaster*, so shap'd to fit it to the Indenture of the Groin in the *Bubonocoele*. Triangular Plaisters are also used in the *Fistula Lachrymalis*, or *Fistula* of the Eye, but are cut much smaller. F
Triangular
Plaster.

The seventh, G, is cut like the *Cross of Maltha*, and is very proper to be apply'd to the remaining Extremity of an amputated Member; the same Shape is also given to a little Plaster apply'd after the Amputation of a Finger. G
Malthese
Cross Plai-
ster.

The eighth, H, is the *Window Plaster*, so called on account of its Hole in the middle: Its use is for Fractures with a Wound; and the convenience of this Aperture is, that the Wound may be dress'd without taking off the Plaster all round it. 'Tis also useful in *Bronchotomies*. H
Window
Plaster.

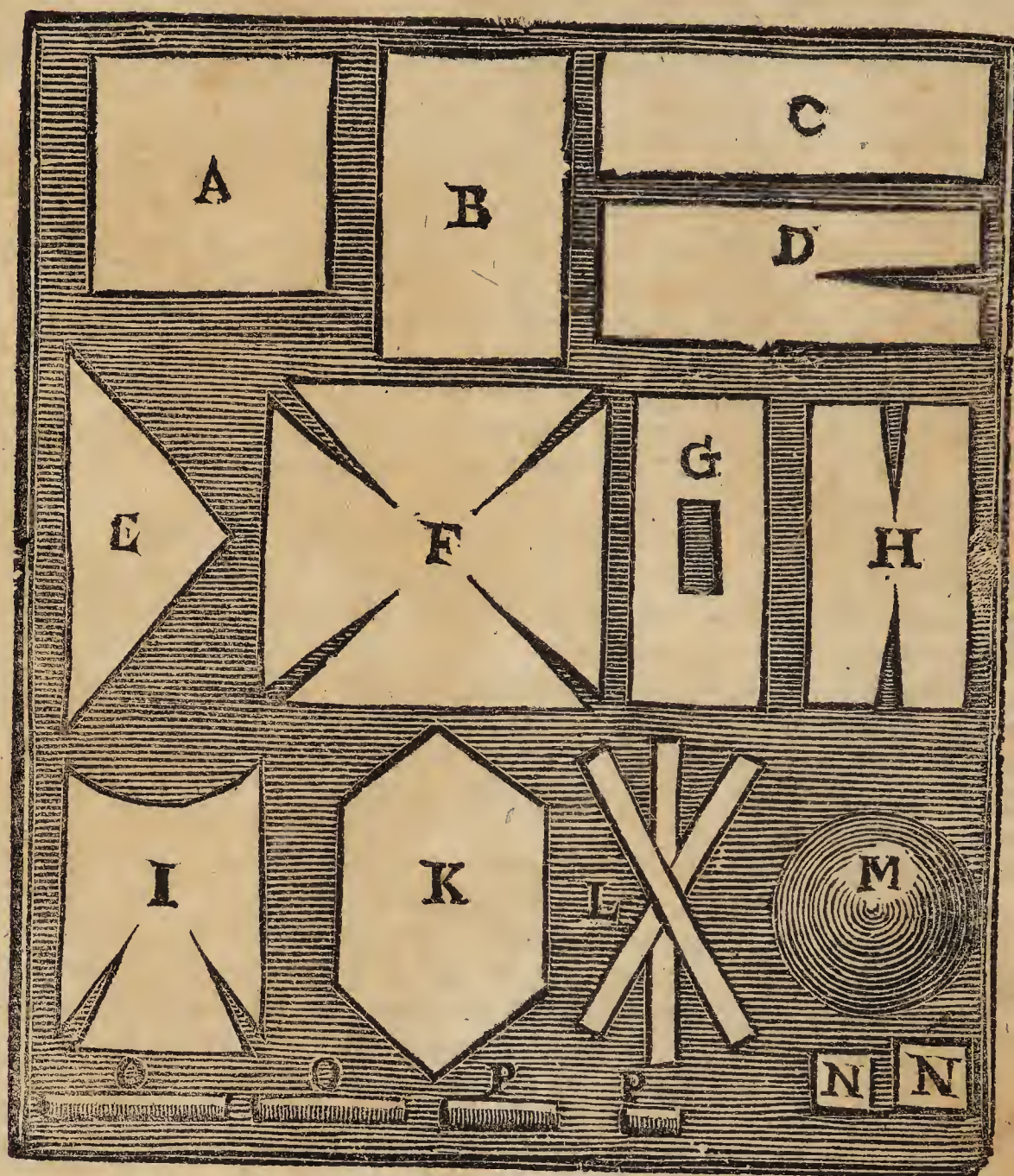
The ninth, I, is the *Trapezian Plaster*, knotch'd or cut at the two ends, to render it proper for unequal Members. I
Trapezian
Plaisters.

The tenth, K, is called the *Escutcheon Plaster*, because shap'd like one: 'Tis a large Plaster cut in this Form, when the Intention is the Application of *Vesicatories* betwixt the Shoulders. K
Escutche-
on Plaisters.

The eleventh, L, is term'd the *Hypsiloide Plaster*, because shap'd like the *Greek Y*: 'Tis apply'd to the *Perineum* after *Lithomy*. L
The Hyps-
loide Plai-
ster.

The twelfth, M, is call'd a *T*, by reason of its resembling that Letter: 'Tis apply'd to Incisions of that Figure. There are several other Plaisters which I don't mention here, because it frequently depends on the Chirurgeon to shape them conform to the Part, or Malady, for which they are used. M
The T
Plaster.

FIGURE VI. Of BOLSTERS.



Bolsters are pieces of Linnen Cloth folded several times double, with which we cover or surround a part; they are used either dry or moisten'd in some Liquid, pursuant to the respective intention of their use.

*Why called
Compres-
ses in
French.*

They are called in *French Compreses*, which Name they derive from their Compression of the part to which they are apply'd; and that it may be equally pressed all over as it ought to be, the Linnen of the Bolsters must be wholly free from all manner of Seams and Selvages; a circumstance which the Chirurgeon ought to observe in all the Linnens which he uses for the Dressing of Wounds.

You will be perfectly acquainted with the Nature of *Bolsters*, when I shall have inform'd you of what, how, and wherefore they are made.

The Matter of which they are compos'd is always Linnen *Of what Cloth, which ought to be even, soft, clean and well wash'd in Bolsters are Lye or Soap-Suds: They must be very thick when a great Pres- made. sure is requisite, or the Part is to be defended against a severe Cold. New Linnen is improper; and 'tis a general Rule, that all the Linnen which a Chirurgeon uses ought to be always half worn, that it may be the more pliable and soft.*

We cannot here prescribe any otherwise than in very general *How they terms the shape and size of Bolsters, because they ought to be are made. proportion'd to that of the Part, the conveniency of the Patient, and a thousand Circumstances of the Malady it self; we shall only observe, that they ought always on all sides to exceed the dimensions of the Plaisters which they cover the breadth of one or two Fingers. There are of them quadrangular, triangular, long, transversal or oblique, circular, and of various other Figures, in all which there is not so much regularity observed as in those of Plaisters. I have caus'd the principal sorts to be Engraven on the Plate, which I shall also explain to you after two Words, concerning their use.*

Bolsters serve for five Ends. First of all they secure and fasten *Wherefore the Bandage. Secondly, They conserve the Heat of the Part they are which they defend from Cold. Thirdly, They keep on the Sore made. the Liquors which they have imbib'd. Fourthly, They fill up the inequalities of an Arm, or a Leg, and make the Band fit the better. Fifthly, they prevent the Laquei in its extension of the Part, by reason it is then wrap'd around with a Circular Bolster.*

The first, A, of all the *Bolsters* is the *quadrangular*, and that *A* most frequently used, because proper in many Cases, and fit to *Square be applied to all places of the Body. 'Tis made large or small, Bolster. as occasion requires.*

The second, B, is by the Antients called the *Splenic Bolster*, *B* from its shape which is oblong resembling that of the Spleen. *Splenic it also admits of different Names, pursuant to its various manners Bolster. of Application; being put on upwards 'tis call'd a long Bolster, when apply'd a-cross 'tis term'd transversal, and when obliquely an oblique Bolster.*

The third, C, is the *long Bolster*, so call'd when apply'd at *C* length on a Leg or Arm; tho' if wrap'd around those Parts, *Long Bol- would be term'd circular: 'Tis much narrower than long, and ster. is not commonly fixed according to the length of the Part any otherwise than under a Splent; when 'tis used circularly 'tis to render a Member even, or hinder the Laquei with which 'tis bound from Paining it.*

The fourth, D, is a *circular Bolster* cut at one end to the mid- *D* dle, which renders it the fitter to be apply'd to the uneven Places *Circular of a Part, and to Fractures of the Arms and Legs, in which Bolster. Cases the Chirurgeon cannot be without it.*

E The fifth, E, from its Figure styl'd *triangular*, is proper for the *Triangular Groin*, and is always made very thick, that by a vigorous Pressure it may prevent the falling of the *Epiploon* or *Intestins* thro' the dilated Rings of the Muscles of the Abdomen.

F The sixth, F, shaped like a *Maltese Cross*, to adapt it the more exactly to the extremity of the amputated part, for 'tis particularly used in *Amputation*; it ought to be whip'd at each Angle, lest the several pieces of Linnen which thicken it being loose, should wrinkle as 'tis laying on.

G The seventh, G, is a *Window Bolster* with an Aperture in the middle, to admit the egress and regrefs of the Air by the Wind-pipe after the Operation called *Bronchotomy*; 'tis also of great use in Fractures with Wounds.

H The eighth, H, is the *trapezial Bolster*, shaped like the Plaister of that Name, that is, cut in at each end in order to fit it the better to the Members of an unequal Surface, on which 'tis always laid circularly.

I The ninth, I, is a *large square Bolster*, cut from its two inferior Angles towards the middle, to accommodate it to the shape of a Shoulder, which is to be cured in case of Luxations of the *Humerus*, i. e. Shoulder, and the *Omo-plata*, or Shoulder Bone.

K The tenth, K, is call'd the *Lozenge Bolster*, because its sides or edges, which are fix, make oblique Angles which are equal to their opposite Angles, as are also the sides; this Shape is frequently given to *Bolsters* rather than round, because they serve to the same purposes as the circular, and 'tis easier and more expeditious to cut in a right Line the four Angles of a square Bolster, which is the most common, then to shape a round one exactly.

L The eleventh, L, is composed of three *narrow long Bolsters*, two of which intersect each other like *St. Andrew's Cross*, and the other, which you see vertically situate, cuts the other at acute Angles; they are successfully apply'd in this order in *Aneurisma* and *Varices*; because that having three Bolsters in the middle, they the more compress the Place where the Vessel is open or relaxed.

M The twelfth, M, is a *round Bolster*, of which sort there are some as perfectly round as Balls; and others which are only so on one side like half Globes: Both the one and the other are put under the Arm-pits, before making the Bandage, after the Reduction of a *luxated* Shoulder; one of them is also clap'd into the Hands of those who have dislocated or broken their Arm Bones.

N, N, To conclude, these last are *little Bolsters*, some of which, N, N, are thick and square, to be apply'd after Bleeding in the Arm or Foot. The two O, O, are long; they are used with Ligatures of the Vessels to tie the Thread upon; and the two others, P, P, are rolled and very small, in order to be employ'd in Sutures, and particularly those of a *Tendon*.

FIGURE VII. OF BANDAGES.



After having provided a Wound with Tents and Plegets, and Definition having cover'd it with a Plaister and Bolster, we finish by of Ban-
 Bandage, or *binding up*, which is nothing but a Circumvolution dage.
 of Bands dextrously carried around some part of the Body, in
 order to preserve or restore Health.

Before we can perform a *Bandage*, we must know what a *What a*
Band is. What we call a *Band* then, is a long and broad Liga- *Band is*.
 ment with which we cover and wrap up those Parts which re-
 quire it, in order to their Re-establishment. Observe then the
 difference betwixt *Band* and *Bandage*, which is, that the *Band*
 is, at the same time, the Instrument and Matter with which
 the

the *Bandage* is made, and *Bandage* is the Use and Apposition of the *Band*.

Several
different
Bands.

Bands several ways differ amongst themselves, viz. with regard to their *Matter*, some being of Leather, others of Linnen; with regard to their *Figure*, which ought to be adapted to the various Parts which they are to bind; with relation to their *Size*, since some are long and broad, others short and narrow, or long and narrow, broad and short; and in their Structure more or less artificial, since several ought to be cut express for several particular Cases; and others are found ready made, as a Napkin, a Girdle, &c. for necessary Uses.

In a *Band* we consider its Body, which is its broadest and strongest Part; and the Extremities are taken either according to their breadth or length, which are what we call the principal Parts; so that there are always four Parts in a *Band*, how small soever it may be; for it cannot want two Bounds to its Length, and as many to its Breadth.

Most *Bands* resemble *Rectangular Parallelograms*, or long Squares; but sometimes several Incisions are made at their ends, and even in their middles; as you may discern by this Plate.

Four qua-
lifications of
a Band.

Four Qualities are necessary to a *Band* to render it perfect: First, that its *Matter* be good, that is, if of Linnen, that it be neither too old nor too new, that it may be soft, loose and light: Secondly, that it be clean and well wash'd, that it may not impress any noxious Quality: Thirdly, that it be of an even plain Cloth, not wrought, and that it be cut the right way of the Thread, by reason, if cut the other way, 'twill slacken and tear; that it be smooth and free from Hems or Knots, as Bolsters are, for fear of giving Pain: Add also, that it ought to have no Selvage, if we desire the binding to be compleatly perform'd. What remains is, that we must take the same Care of our Bands of Leather or Stuff.

General
Division of
Bandages.

Bandages are either common or proper: The Common may be apply'd to several Parts for several Maladies; as simple *Bandages*, as well equal as unequal; and the proper are only useful to certain Places, and such and such Diseases: And the number of these last sorts is as large as that of the various Parts of the Body. I don't pretend here to explain them all to you; the Discussion of them is of such a large Extent, that it requires a particular Course: I shall treat no farther of Bandages, than what is necessary to enable you to comprehend the Operations which I am to demonstrate to you.

Bandage is either *simple* or *compound*: We call that simple which is barely a wrapping round with one single Band, from which nothing is cut, or to which nothing is added. This *Bandage* is of two sorts, *equal* or *unequal*; the *simple equal Bandage* is circular, it surrounds the Part like a Hoop; the Termination of the Band is even, without any Imparity of Circuits: The *simple unequal* subdivides it self into four sorts: It is call'd *Doloire*, when the Circumvolutions deviate but little, yet covering one another; they.

they are nam'd *Mouffes* when they grow more irregular; they are term'd *rampant* or *winding*, when they stray so far from each other, as to discover distant Spaces betwixt them; and *renvers'd Bandage*, when the Inequality of the Part requires the folding and turning of the Band inside outwards: *Compound Bandage* is that which is compos'd of several Bands join'd together, or of one alone cut into several Parts.

All *Bandages* are not begun and ended in the same manner: *Applicati-*
Some begin with one of the Extremities of the Band, as those *on of Ban-*
of *Fractures*; others at some distance from one of its ends, as *dages.*
those of *Phlebotomy*; and also by the middle of the Band, when 'tis roll'd at both ends, as the *Capeline*.

Frequently the first part of the Band is plac'd on the Part affected, sometimes on the neighbouring Part; at other times on a distant and opposite Part, and always pursuant to the Intention of the Bandage; but it ought never to be ended upon the Wound, because the Pin which fastens the last part of it, will not fail to afflict the Patient with the utmost Pain.

Bandages are subservient to Remedies, or themselves supply *Their Use.*
the Place of them. The number of these last is very great; for all the *Bandages* used to *Fractures* and *Luxations* almost solely Cure them: The different uses of *Bandages* occasions their various Names; as those are called *inearnative* which close the Lips of a Wound; those *expulsive*, which draw or guide outwards the purulent Matter of *Abscesses* and *Ulcers*: These Sores are very commonly cur'd by the last Means. As for the first sort, they are only subservient to Remedies, and they are call'd retentive; they are very common in comparison with other Bandages, and contribute no farther to the Cure, than by retaining the Medicaments on the Part affected; there are also several of these which are only proper for certain Parts, as the Throat or Belly, which cannot bear any other Bandages.

The Matter of the *Bandage* having all the Qualifications above-mention'd, the rest depends on the Chirurgeon, who, thoroughly instructed in the difference of Bandages and the Cases to which they ought to be apply'd, has no more to do than to apply the Bands properly, and take them off with address.

The Part will be equally bound up, if the following Circum- *How to*
stances be duly observ'd: The Chirurgeon must place the Patient *bind up*
in a convenient Posture, that he may cause one or more of his Ser- *well.*
vants to hold the Part to be bound: The Band must be hard roll'd up, so even that the Convolutions exactly cover one another like concentrical Rings; he takes it in one hand, and holding the first part of it in the other, he must proceed without hesitation, or giving any Suspicion that he doth not know where to begin: From which Moment, that his Patient may not languish, he ought, with equal Diligence and Exactness, to surround the Part affected with the Band: Neatness and a good Grace are necessary, that the Patient, those with him, and the Operator himself, may be pleas'd with his Performance. The Bandage done, he must ex-

amine, whether the Circumvolutions are securely and equally made, whether it be neither too laxe nor too hard, and whether well adapted to the Form and Substance of the Part: Then, to place the Part in such manner on Cushions, that it remains firm and free from Pain; observing, as a General Rule, that the Posture of the Arm be somewhat bent, and the Leg wholly extended.

What to be observ'd in taking off the Bandages.

If the Dexterity of the Chirurgeon appears by his exact and neat Apposition of the Bands, 'tis not less discover'd by his taking off the same, when he acquits himself with Ease, without Confusion and Trouble. To unbind the Part, he must put it in the same Posture it was when bound up; cause the By-standers to hold it firm, and then undoing the *Apparatus*, and neatly and tenderly taking off the Bands, unrolling them now with one hand, then with the other, without letting them slip out of either; and above all, taking Care to avoid giving any Pain: If they stick to one another, or to the Part, to dis-engage them the more easily, they must be moistened with some Liquor, which is to be diversified, pursuant to the State of the Indisposition: Oyl, for Instance, is us'd when the Part is in Pain; Wine, when 'tis cold or weak; and *Oxycratum*, or Vinegar and Water, when inflam'd.

Particular Bandages.

Let's now examine some Bandages, which are represented in the Seventh Plate; in which I have caus'd to be engraven only those of daily Use, and which a Chirurgeon is indispensibly obliged to be inform'd of.

1. A.
Veil or Coverchef.

The first, A, is the *Veil* or *Coverchef*, so called, because it covers or wraps round the whole Head: 'Tis made of a Napkin, pleated in two Pleats, in order to be put on the Head; and of the four Corners which hang upon the Face, there are two which are ty'd under the Chin, and the other two in the Nape of the Neck; this *Bandage* is most used of any, and is proper for Wounds of the Head.

2. B.
Forehead-Cloth.

The second, B, is the *Forehead-Cloth*: 'Tis of two sorts; one Simple, which is made of a Band turn'd circularly round the Head; and the other figur'd, which is compos'd of several pieces, or rather foldings of Cloth sewed together, and provided with four Ribbons, at the four Corners, to tie it at the back part of the Head: This *Bandage* is particular to the Front.

3. C.
The Scapular.

The third, C, is the *Scapular*, so called from its resting on the Shoulders: 'Tis made of a piece of Cloth of two or three foot long, and seven or eight inches broad: 'Tis cut in the middle in proportion to its length, that it may come over the Head. Its Use is to sustain all *Bandages* apply'd to the Breast and Belly. One of the C's shews that out of its place, and the other that apply'd to the wounded Part.

4. D.
The Napkin.

The fourth, D, is the *Napkin*; we take one of a sufficient Length to go round the Body, fold it long-ways three or four times, and with it bind up all Wounds of the Breast and lower Belly; 'tis fasten'd behind and before to the Extremities of the *Scapular*, which prevents its sinking.

The

The fifth, E, F, G, is a *bleeding Ligature*; 'tis about an Ell 5. E, F, G' long, and two Fingers broad: E shews it you before 'tis us'd; F *Bleeding* shews you an Arm after 'tis bound up; and G informs you how *Ligature.* to apply a Ligature to the Foot after bleeding, which is called a *Stirrop*. I shall more largely discourse on these two Bandages, when I treat on the Operations for which they are proper.

The sixth, H, I, is a Bandage for the Arm or Leg, called the 6. H, I. *Tortile* or *Winding* Bandage; it consists of a Band roll'd up at the *Winding* end, two or three Fingers broad, and about two Ells long. When *Bandage.* 'tis apply'd to the Arm, 'tis begun by a circular Circumvolution or two about the Wrist, and continued to the Shoulder, leaving Spaces betwixt each Round; and when 'tis us'd on the Leg, it begins with a Stirrop, the first End being clapt under the Sole of the Foot, and ascending by winding Degrees to the Thigh: This Bandage is barely retentive, its sole Business being to keep the Remedies fix'd on the Part. H is one apply'd to the Arm; and I shews the Band of which 'tis made.

The seventh, L, is the plainest and most simple of all: 'Tis 7. L. perform'd with a small short Band, no longer than what is neces- *Simple* sary to go once or twice directly round the Part, without either *Bandage.* ascending or descending.

The eighth, M, is another retaining *plain* Bandage; to per- 8. M. form which, a broader piece of Cloth is necessary than the for- *Another* mer; 'tis sometimes tyed on with small Strings, or else sewed to *plain Ban-* the Part. *dage.*

The ninth, N, is a Bandage proper for a Leg, which is to be 9. N. very tight bound up, and is perform'd with such a Band as the *Returning* winding or tortile Bandage; the first End is placed under the Sole *Bandage.* of the Foot, from whence 'tis roll'd a-cross in such manner, that on the Instep it makes a sort of *St. Andrew's Cross*; after which, its Circumvolutions are continued to the Knee-Pan: But it must be observed, that, at the Place where the Calf of the Leg begins, it must be turn'd a-cross; which Course is to be continued 'till it comes to the fullest part of that Member; for otherwise the Bandage would sit hollow, and not keep the Leg equally tight, which is what is necessary.

The tenth, O, is a Band equally roll'd at both ends; 'tis ordi- 10. O. narily apply'd by the middle, each of the Ends being held in each *Bandage* Hand. This Band is broad or narrow, long or short, according *roll'd at* to the difference of the Parts, or Sores. It serves to make the *both ends.* *Capeline* and *Spica*, Bandages in very frequent Use.

The eleventh, P, is a small Band two Fingers broad, and long 11. P. enough to roll twice about the Part; 'tis slit near one of the *Incarna-* Ends, to pass the other through it: This Bandage is call'd *tive Ban-* *dage.* *Incarnative*, *Sarcotic*, or *Uniting*, by reason it re-unites the Lips of the Wound made long-ways, in order to spare by that Means a Suture. This Bandage is begun, by fixing the middle of the Band to the Part opposite to the Wound; for Instance, if 'tis to be used for the Forehead, to which 'tis particularly adapted, the middle of the Band must be plac'd on the Occiput, or hind part

of the Head, and running the two Ends on both sides above the Ears, one end is run or chang'd through the other on the right side of the Wound through the Slit; then drawing both of them, the edges of the Wound are brought to join so exactly, that they may unite without any Deformity.

12. Q.
Bandage
with four
ends.

The twelfth, Q, is a *Bandage with four Ends*. 'Tis made of a Linnen Band, whose two Extremities or Ends are length-ways cut in two: When they are cut in three, 'tis a Bandage with six Ends: And when each of them is divided into four, of eight Ends: This Bandage is proper for several Parts. We place it chiefly amongst the *Incarnatives*, since it serves to close the Lips of a Wound made a cross. By the Assistance of these two last Bandages, many Sutures are avoided, from which the Chirurgeon ought to exempt his Patient as much as possible, because they will always, in order to their Cure, prefer the being subjected to the obtuse Sense of a Bandage, to the suffering the sharp Pains of a Suture.

13. R.
The Ban-
dage T.

The last, R, is a *figur'd Bandage*, representing a T; 'tis call'd *figur'd*, because made of two Bands sew'd together: There are simple or single ones, as this; and others which are slit and double, which are used on several Occasions. This Bandage is adapted to several Parts; 'tis us'd above all in *Lithotomy* and the *Fistula* of the *Anus*.

If I should descend to the detail of Bandages, I must ask your Patience for a much longer time than we are allow'd to pass in our Assemblies; wherefore, what I have said will be sufficient to give you as much Information as is necessary at present: After which, let's proceed to treat of Sutures.

FIG. VIII.

FIGURE VIII. of SUTURES.



Suture is a Chirurgical Operation, which, by means of a Thread-*Definition*
ed-Needle, contributes to the re-uniting and restoring to a *of a Suture.*
perfect Continuity the parts of our Bodies violently divided, and
that whilst yet a Bleeding.

The Word *Suture* is taken in two Senses; either for a Con-
nexion of the Bones of the *Cranium* or Skull, join'd together by
a sort of Saw-Teeth, which engage or bind them one within
another; or for the sewing up of Wounds which require it: In
the last of which Senses we understand it, when we often affirm
Suture to be the best mean that can be used for the re-uniting
of Wounds just made, when Bandage, favour'd by the most ad-
vantagous situation, cannot compass that end; because the

Lips of the Wound being brought to approach each other by the assistance of the Points of the Needle, the principal extremities of the Fibres, which were either cut or torn, return and apply to each other, and to the state in which they were before their Fracture and Separation.

Their Division.

The Ancients invented several *Sutures*, which they reduced to three sorts, the *Incarnative*, *Restringent* and *Conservative*.

Suppression of some of the Ancients *Sutures*.

The *Incarnative* is so called, because that re-uniting the Edges of a Wound, and retaining them so join'd by means of the Thread drawn thro' them by a Needle, it causes them to conglutinate, knit, heal over, and re-assume their pristine Continuity. These *Incarnative Sutures* are subdivided into five Species, which are the *intersected*, the *tortile* or *threaded*, the *pegg'd* or *feather'd*, that with a *buckle* or *clasp*, and the *dry Suture*: Of these five Species we suppress two of them, as too cruel and wholly useless, which are the *pegg'd* or *feather'd*, and the *Suture* perform'd by a *buckle* or *clasp*. The former is term'd the *pegg'd* or *pinn'd Suture*, when perform'd with *wooden Pins*; and the *feather'd*, when done with the *Quils of Feathers*: The Operator threads two or three Needles with a double Thread, which is pass'd thro' the Edges of the Wound making holes at a Fingers distance from each other, and in the Loops of each of these Threads he fixes a wooden Peg or Pin, or the *Quil of a Feather*, and binds them with the ends of the same Thread, that the Quils may keep the edges of the Wound closed; but pressing them so as to cause continual Pains and Obstructions, followed by several miserable Accidents: To perform the other Operation, the Ancients had *curve buckles* pointed at both ends, one of which they thrust into the upper, and the other into the lower part of the Wound, to close its Lips. You will easily judge, by this Recital of these two *Sutures*, how cruel, and at the same time how useless they were, since in the Cases where they seem most necessary, as in deep Wounds, where the contraction of the divided Fleshy parts keeps the Mouth of the Wound very wide, and in Wounds of the Tendons, they expose the Patients to terrible Convulsions and Contritions, which are avoided by diminishing as much as possible by moderate Compression the dilatation of these Wounds. I shall proceed no farther on them; but explain in a moment the three others, which are the *intersected*, *threaded* or *tortile*, and *dry Sutures*.

The name of *Restringent* is given to a sort of *Sutures* which pretend to stop the Blood in large Wounds, where there is an *aperture* of the more considerable Vessels; to which end several kinds of them have been devis'd, of which number are the *Shoemakers*, *Tailors* and *Skinners*, &c. *Sutures*, all of them more useless one than the other; for if we do but even a little reflect on this *Suture*, we cannot help condemning it: Suppose then, that the Skin was so exactly sewed up, that the Blood could not come out, would it not escape under it thro' the Aperture of the Vessel, from whence 'twould run into all the distant spaces betwixt

Reasons of their Suppression.

betwixt the Muscles; which would swell, putrify and gangrene the part. So that this *Suture* is not retrench'd without just Reason; and the rather, because there are other more certain and less painful means of stopping Blood. But yet the use of that of the Farriers is yet retain'd for the *Suture* of Wounds in the Intestins, which I shall to morrow demonstrate to you in the *Gastrorhaphic* Operation.

The name of *Conservative Suture* is bestow'd on that, which in large Wounds, in which part of the Substance is lost, prevents the too wide Seceſſion of the edges of the Wound from each other; but a Bandage ſufficing to that end, 'tis needless to run a parcel of long Threads a-cross a Wound, where they fatigue us in the Dressing; and by their attraction, incessantly irritate the Motion and natural Bent of the parts, 'till they are cut or break; wherefore I diſmiſs it, to accompany the *Reſtringent* or *Styptic Suture* in its Banishment,

'Tis not on my own Authority that I retrench these *Sutures*, I am not the sole Proſecutor which has indicted them: The ſmall advantage which reſults from the uſe of em, and the Evils which they cauſe, have continually drawn on their Condemnation. For the ſpace of above 30 Years, in which I have practis'd Chirurgery, I have never either made uſe of them my ſelf, or ſeen them uſ'd by any other Chirurgeon; and of above four hundred Chirurgeons here at preſent aſſembled, I don't believe there is one that ever ſaw theſe Operations performed.

The ſole advantage which we draw from *Sutures* is Re-union, *Uſe of Sutures.* in the Procuration of which two things concur, the *Chirurgeon* and *Nature*. On the *Chirurgeon's* part the Obſervation of two circumſtances is abſolutely neceſſary: Firſt, to draw the Lips of the Wound to a mutual cloſure, and ſecondly to keep them in that ſituation; and on the ſide of Nature ſhe is obliged to make uſe of her Balm, as the moſt proper Cement to conglutinate and mutually re-unite the Lips of the Wound. Be not ſurprized, that I put the Chirurgeon before Nature, ſhe would labour in vain on a Wound, if his Induſtry did not reduce the parts to ſuch a ſtate as is reparable by the Motion and Juices provided by her wiſe Oeconomy to that end. In order to conceive how this Re-union happens, we muſt be informed that all the Parts of our Bodies are compoſed of nothing but Tubes, perpetually tranſfuſ'd by Liquors, which endeavour to diſperſe themſelves to all the Parts, and, by continual impuſe, incline to circulate from one Part to another: So that as ſoon as the Chirurgeon has cloſed the Lips of the Wound by Suture or Bandage, and ſubjected them to this Diſpoſition; the Humours, which are perpetually attempting to paſs and repaſs from one Lip to the other, finding the Conduits broken, flow out of the Veſſels, and their moſt glutinous and baſmamic Particles ſtopping in the Intervals, which always remain in a Wound, even the moſt exactly cloſ'd, there condenſing and indurating by the heat of the Place, and withal joining to the two ſides of the Wound, they keep themſelves ſo

How the re-union is accomplished.

united, that the Extremities of the Fibres and Capillary Vessels, mollified and nourished in a small time, proceed to a perfect Continuity, of the same Texture as before their Disunion. In transverse Wounds, we cannot dispense with the Use of Sutures, and especially in those which Bandage cannot re-unite; for when such Bandages, as the *uniting* and *incarnative*, are sufficient immediately to close the Lips of a Wound, the Patient ought to be spar'd the Trial of all other Means. Lacerated Wounds, to which pieces of Flesh hang, as those of a Nose or Ear half cut off, also require sewing: But 'tis a Mistake, to pretend to apply Suture to such Parts as the Nose and Ears, when they are intirely separated from the Body, tho' some Authors have advised it: 'Tis also ridiculous to believe, that 'tis possible to repair the Loss of a Nose, by the immediate Substitution of a bit of Flesh, cut out of the Thigh or Arm, and shap'd like Nostrils, though some Authors tell us they have try'd it with Success.

Cases in
which Su-
tures are
prejudicial,

Though *Sutures* are infallible Means of the closure of the Wounds, and procuring their Re-union; there are yet some Occasions, in which the Use of them is interdicted us. Six or seven Cases, in which they ought not to be practised, are; First, in Wounds suspected to be *invenom'd*, because 'tis proper to provide an Issue for the Poison, and to conduct the Remedies to the Interior of these Parts, to which the Venom has insinuated it self; Secondly, in *Wounds of the Breast*, by reason of its continual Motion; Thirdly, in those accompanied with *violent Inflammations*, because the point of the Needle would yet increase them; Fourthly, in *Contusions*, the Flesh not being firm enough to bear the Thread; Fifthly, in these Wounds attended with the *Aperture of the great Vessels*, which are to be closed by Ligature or Astringents; Sixthly, in those which discover the Bones, by reason of the *exfoliation* which is to be expected; Seventhly, in Wounds accompanied with a signal loss of Substance, because 'tis necessary to draw out the *Pus* or Matter, in order to the Regeneration of Flesh.

Shape of
the Needles,

When a Wound is not of any of the kinds which I have just mentioned, and a Chirurgeon is convinced of the Necessity of a *Suture*, before he proceeds to the Operation, besides the *Apparatus* common to a Wound, he ought to be provided with three things absolutely necessary to the performance of it; a *Needle* A, *Thread* B, and a *small Tube* or *Pipe* C; we ordinarily chuse a Needle proportionable to the Nature of the Wound, in order to which we must be provided with those of several Shapes and Sizes: There are streight ones, and others more or less Curve; but the crooked ones are preferable, because there are no places of the Body to which they cannot be used, and that more conveniently than those which are streight; their Steel must not be brittle, but yet a little hard, that it may not bend; they ought to be polished, sharp pointed, and wholly free from Rust, that they may the quicker make their way, and that in their passage

through

through a Wound they don't rase it. The head of this Instrument ought to be provided with an Eye, through which the Thread or String is run, and its sides should be excavated like a small Gutter, that the Thread placing its self in those little Notches, may not stop the Needle by hindring its easie passage, by reason of the clumisie thickness it may give the head. The Thread ought to be even, round, equal, soft, and of a fit fineness or courseness for the Needle. The *Epinay* or *Florentine Thread* is preferred to Silk, because when dyed it cuts the Flesh quicker, all those Dyes being corrosive and caustic. The Thread is used single or double, pursuant to the force 'tis to resist, and waxing of it must not be forgotten, that it may not rot but hold the better. The *Tube* ought to be of Silver, rather curve than streight, in order to be serviceable to all parts of the Body; it should be cut through to give passage to the Needle, and cleft at the end to let the Thread through. Some assert the Chirurgeon's Fingers to be better than a Pipe, to hold the edge of a Wound whilst sewing; and indeed there are some Cases in which its use may be dispensed with, though not in all. C, represents how this Instrument must be shaped.

Qualities
of the
Thread.

In performing of a *Suture*, six or seven general Precepts are to be observed; the first of which is, that the Wound be well cleansed of all clots of Blood, and other exotic Bodies: Secondly, that its Lips be join'd by a Servant, who holds them close during the Operation: The Third is, not to take in too much of the Skin, by piercing it obliquely: The Fourth, not to penetrate the Flesh deeper than is necessary, to avoid leaving at the bottom of the Wound, a space where the Humours may amass and putrifie: The Fifth is, to leave a moderate distance between the Stitches: The Sixth, to avoid the puncture of the Nerves, Membranes and Tendons: And the Seventh consists in sometimes venting the lower part of the Wound, to make it an Issue. Thus instructed with these general Rules, we may set our Hands to the Work; but the *intersected*, the *tortile* or *threaded*, and the *dry Sutures*, are differently performed. I shall now demonstrate these three one after another.

R.
Rules for
Sutures.

The *Intersected* or *Interstitch'd Suture* is so called, because at each Stich the Needle makes, the Thread is cut after having made a knot: This Operation is performed two ways, either with a single or double Thread. To perform the former, the Operator takes his Threaded Needle in his Right, and the Tube in his Left Hand. Some will have the point dip'd in Oyl, that it may give the less Pain at its entrance; then supporting the superior Lip of the Wound with the Tube, the Operator thrusts in the Needle, and when 'tis passed half thro' the Hole or Window of the said Tube, he draws it quite through; after which, doing the same thing to the inferior Lip, he passes the same Thread through that from within, outwards; if the Wound require several Stitches, he makes as many as are necessary, and after-

afterward knots each Stitch severally, taking care not to tye the knot on the Wound; but at the upper part of it; he must tye a Chirurgeon's knot, which is done by passing the Thread twice through the same noose, by reason it holds better than the single knot. Some Chirurgeons place very small *Linnen Bolsters*, D D, under each knot. The other Species of *interfected Sutures* is performed with a double Thread, with which the Needle is threaded; the Operator makes a loop at its end, and when he has run it through the Wound, as the former, the loop left at the inferior part of the Wound is raised to the superior, and the Thread run through it, after which having tied it with a double knot, he cuts it with the Scissars, E. This *Suture* differs from the other not only in the doubling of the Thread, but also by its beginning at the inferior Lip of the Wound, which is the place where the Thread is to be noos'd, and it has this advantage over the other, that 'tis more proper for deep Wounds, because stronger, and that it closes more exactly.

In order to the exact performance of these *Sutures*, the Chirurgeon ought to be provided with a Cushion, F, stuck with Needles, G, of all sorts, streight, curve, large, small, round, flat, and triangular, threaded with several sorts of Thread, to the end that he may have ready before his Eyes what is proper for the Wound to be sewed up; otherwise he will frequently be oblig'd either to make use of an improper Needle, or to wait the coming of one sent for.

Circumstances necessary to this Practice.

After performance of the *Suture*, there are yet some essential Circumstances to be observed; the principal of which is, that after having closed the Lips of the Wound as exactly as possible, to provide for their remaining in the same state. Several Authors advise to apply to the Wound a Powder called the *Conservatrix of Sutures*, composed of glutinous and viscous Ingredients, such as *Mastick*, *Myrrh*, *Bolus*, and *Aloes*; of this Powder there is some in the Viol G. Others assert the best Remedy to be the nutritive Juice, which repairing to the Part, procures the Reunion: And *Arcaus's Balsam*, which is in the little Pot H, is commonly used, and with that the small Pledget I is charged and clap'd on the *Suture*, and afterwards covered with the great Pledget K, which is large enough to extend over the Knots, to the end that the Plaister not sticking to them, the Dressing may be taken off without pain. Next is laid on the Plaister L, which ought to be composed of viscous and astringent Ingredients, such as that for Ruptures; then the Bolster M. moisten'd in some Liquor which fortifies and resists Putrefaction. As for the Bandage, it ought to be conform'd to the Figure of the wounded Part, for which reason it cannot be particularly specified; but it must be so perform'd as to retain the Lips of the Wound closely join'd together.

How to perform the tortile Suture.

The *Tortile* or *threaded Suture* receiv'd its Name from the Operator's leaving the Needles in the Wound, and winding the Thread

Thread about them, in the same manner that Tailors do about their threaded Needles which they stick on their Sleeves. This *Suture* is also perform'd two ways; either Needles are run across the Wound, as that mark'd N, or as that which is pointed at by O, they are fixed on its sides. Both of them are commonly perform'd with two Needles; for the first, the Operator takes two streight sharp-pointed Needles, which, one after the other, with the help of the Pipe, he runs across the Wound: He begins to enter them on the outside of the Wound inwards, and draws them out from the inside outwards, and finding them so disposed, as that their Extremities make a regular Square, he takes a Thread which he winds about their four Ends, and cross over the Wound three or four times in such manner as he causes the Lips to close exactly; after which, fastning the Thread, he cuts off the Points of the Needles with an incisive Forceps, and finishes with two Bolsters, P P, which are put under the Needles. The second sort of *Tortile Suture* differs from the former only in that the Needles, instead of crossing the Wound, are run along its Lips, as you see in the Figure. I allow these Needles to be two exotick Bodies, which may incessantly grate and rase the Wound; but if they are supportable across the Wound, they will not do any greater hurt in this Disposition, since they must give less pain, and close a Wound without leaving any thing in it which can fatigue it. These Sutures are admirably adapted to those Parts which we cannot help moving continually, as the Lips.

The *dry Suture* is so called, because it does not require any *Of the dry* Effusion of Blood, nor does it want either Needle, Thread or Pipe; *Suture*, 'tis applied without pain: 'Tis also, like the former, distinguish'd into two several sorts, because sometimes perform'd with a *single piece of Stuff*, and at others with *two*. To perform the first, the Operator takes a small bit of Cloth or Leather, shap'd like those mark'd Q, which he covers with strong Glue, or some viscous Ingredient which sticks it fast to the Skin, as Meal intermix'd with the White of an Egg; he applies one moiety of it on one side of the Wound, and when fix'd on the Skin, he draws the Cloth by its remaining part, in order to apply it on the other side, where sticking it very fast, by that means closes the two Lips of the Wound: This Suture is very easily performed, but is solely proper to be apply'd to superficial Wounds. The other *Several* kind of *dry Suture* is not so lightly performed; the Chirurgeon *ways of per-* takes two small bits of Leather, R R, cut in a triangular Form, *forming this* on one side of which are three Indentures, to each of which is *Suture*. fasten'd a small Thread; these Leathers are spread with some Ingredient which sticks them fast to the Skin, and the Chirurgeon lays one of them on one of the Lips of the Wound, and the other on the other, taking care that the two Places on which they are laid be about a Finger's breadth distant from the extremities of the Edges of the Wound, as is expressed by R; after

after which, by drawing the ends of the Thread, he causes the Lips of the Wound to close, and tying the Thread together by a double Knot keeps them join'd, so that the Re-union may easily be accomplish'd. Some sew the Indentures to one another, or fix Buckles on them in order to pass through a small String; and others only make use of two small bits of Leather mark'd S S, spread over with the same Remedy, and provided with the same Threads, Tapes, or Ribbans; but this does not alter the Species, and serves only to the same end. This Suture is extraordinary effectual in Wounds of the Face, by reason that avoiding the deforming Marks occasion'd by the Points of the Needle, the remains of them are very little seen after their Cure.

I don't mention *figur'd* and *angular Wounds*, because their differences may be so numerous, that 'tis impossible to shew you here *how* to sew them all; I shall only hint to you in general, that we always begin the Stiches of the *Intersected Suture* in the Angles, when there are any, and in the middle of their right or circular Lines, when there are none: We make as many Stiches as the length of the Wound requires, observing not to make them too close, nor too far from each other, but at such a reasonable distance from one another, as the danger of the Wound's separating again requires, closing first and with the strongest force that Place which is most violently inclined to dilate, by reason that keeping that firmly closed, all the others will of themselves remain in the Situation in which they are placed.

When a Wound is Re-united, the next Task is to take off the Suture; in order to the performance of which with Prudence and Address, the Chirurgeon ought to be thoroughly acquainted with two things; *when*, and *how* to take it off. He must know *How to clear away the Suture.* the time of removing it to be, when he finds the Wound perfectly well cur'd; when there is nothing left to Cicatrife but the small Stiches made by the Needle, which always keeping those Holes open prevents their closing: The way of their removal is different, according to the nature of the Suture; the *Intersected Suture* is removed one way, the *Tortile* another, and the *Dry* yet another way. If an *Intersected Suture*, a small Probe ought to be run under the Thread, after which it must be cut near the Knot on the Probe, and afterwards in drawing it out by the Knot the Finger must be kept on the Wound in such manner as to prevent its opening again: If a *Tortile Suture*, the Thread around the Needles is unwound, and the Needles dextrously drawn out, taking care that it be done without Violence, for fear of renewing the Wound; and if a *Dry Suture*, nothing is requisite but Water to moisten the bits of Linnen or Leather stuck to the Skin, which being wetted easily come off.

This, Gentlemen, is all that I have to demonstrate to you to day in general of *Operations* and *Sutures*: To morrow we shall begin with the Operations practis'd on the *Lower Venter*, herein following

following the Course of the Anatomical Demonstrations, in which we first examined the Parts contain'd in that Region, they being most subject to Corruption, and also those where is made the first Preparation of the Juices, which are afterwards to be distributed through the rest of the Body; besides which, we have also another Reason to begin with them, which is, that they are more exposed than others to those Maladies, whose Cure of right belongs to the Chirurgeon.

End of the general Account of Operations.





THE
Second Demonstration
OF
Chirurgical Operations.

*Of the Operations practised on the
Lower Venter.*

GENTLEMEN,



A N is no sooner Born than an indebted Tributary to Chirurgery, and must immediately suffer one of its Operations, without which he will be in danger of Death soon after his Birth: He scarce sees the Light when he implores the Chirurgeon's Aid, to make the Ligature and Incision of the Navel-String. Our want of such an Operation at our coming into the World, proves the necessity of the Art whose Practice we are teaching, since without it, as soon as our Respiration begins, we should be forced to Breathe our last.

*Of the Li-
gature of
the Navel-
string.*

Let none pretend, that this Operation practised on the Navel-string is none of the Chirurgeon's Right, because Midwives are made use of to perform it; for though excited by an ill-grounded Modesty, the Chirurgeons anciently instructed Matrons in the Art of delivering Women, 'tis yet a Truth, that the Delivery of Women does not less depend on Chirurgery, than the Diseases of the Eyes, Teeth, the Stone, Fractures and Luxations; which are yet practised by Persons, distinguished by the Appellations of

Oculists,

Oculists, Tooth-drawers, Lithotomists and Bone-setters, since all these several Operators have no farther Success in the Cure of these Infirmities, than what is owing to their conforming to the Rules prescribed by our Profession.

The Chirurgical Science is of such large Extent, that we have been obliged to divide it into several Professions, to which several Persons following their Genius have solely apply'd themselves; and really the Parts of Chirurgery are so numerous, that 'tis very difficult for a Chirurgeon equally to excell in them all, tho' he must not be ignorant of any of them; he must not set Bounds to his Knowledge; and this is what distinguishes him from these particular Operators.

Those Chirurgeons which either don't make the Delivery of Women their chief Business, or resolve not to meddle with it at all, ought to know how the *Ligature of the Navel-string* ought to be performed, because that either being call'd at the Moment of a Woman's Delivery, or being alone with her, they will see the Infant expire in their Arms, if they are ignorant how to adjust the Navel-string.

This *Ligature* must not be long deferred, for the Reason I am going to offer: You may have been informed by my Anatomy, that the Blood is convey'd from the Mother to the Child along this String, by the Umbilical Vein, and that it returns from the Infant to the Mother by the Arteries of the same Name; which is manifest by the Pulsation of those Arteries which we feel all along this String, and which answers to the Motion of the Child's Heart; so that you may very well conclude, that by retarding the Ligature, the Child may lose all its Blood, because the Arteries incessantly convey this Humour to the *Placenta*, where it may run out at the same Mouths through which it before repass'd to the Mother; and now no more returning by way of Umbilical Vein, to repair the Loss of what was voided, this Issue need remain but a short time to kill the Child.

This Operation, which is call'd *Embruotomy*, from *Embruo*, which signifies Infant, and *Temnein*, to cut, because it consists of the Section of the Navel of a Child just born; This Operation, I say, though one of the plainest in Chirurgery, requires all the Application of him that performs it, because 'tis accompany'd with some very nice essential Circumstances; and we have known several Children die, where it has not been well done. The manner of acquitting your selves perfectly well in this Case, now follows:

The Operator takes a Thread, which he folds five or six times double, about the length of a Foot; at each end of which he ties a Knot to keep the Threads together, and prevent their entangling in the Ligature: With this Thread, A, thus prepared, *Thread, A.* he ties the String two Fingers breadth from the Child's Navel, *to tie the* making a double Knot at first; after which, returning the Thread *Navel-* to the other side, he makes such another, which he repeats a *string.* third time for greater Security; then, with a good pair of *Scissars,*

Sciffars, B. fars, B. he cuts the String a Finger's breadth beyond the Ligature, so that there remains no more of the Navel-string united to the Child's Belly, than three Fingers breadth in length.

This Ligature ought to be moderately hard; for if it be strain'd too tight, it may happen to cut the Navel-string, especially if of Silk, or fine Thread: Nor ought it to be too slack, for fear the Blood should escape through it; which would occasion the Death of the Child, before the Flux can be discerned, because the Child is then dress'd; and this is what happens but too often. We then observe the middle betwixt these two Extrems; and after the Ligature is made, and the String cut, examine whether no Blood issues forth, which is an evident Proof of the well Performance of the Operation.

The Artist takes a bit of Linnen, of the breadth of three Fingers, which he moistens in Oyl, or covers with fresh Butter, to wrap up circularly the remainder of the bound Navel-string, which raising up a little, he rests it on a small Bolster, with which he has provided the Child's Belly; he puts a second on the Navel, and binds the whole with a Linnen Band four Fingers broad, which is roll'd around the Body.

*An Incon-
venience to
be avoided.*

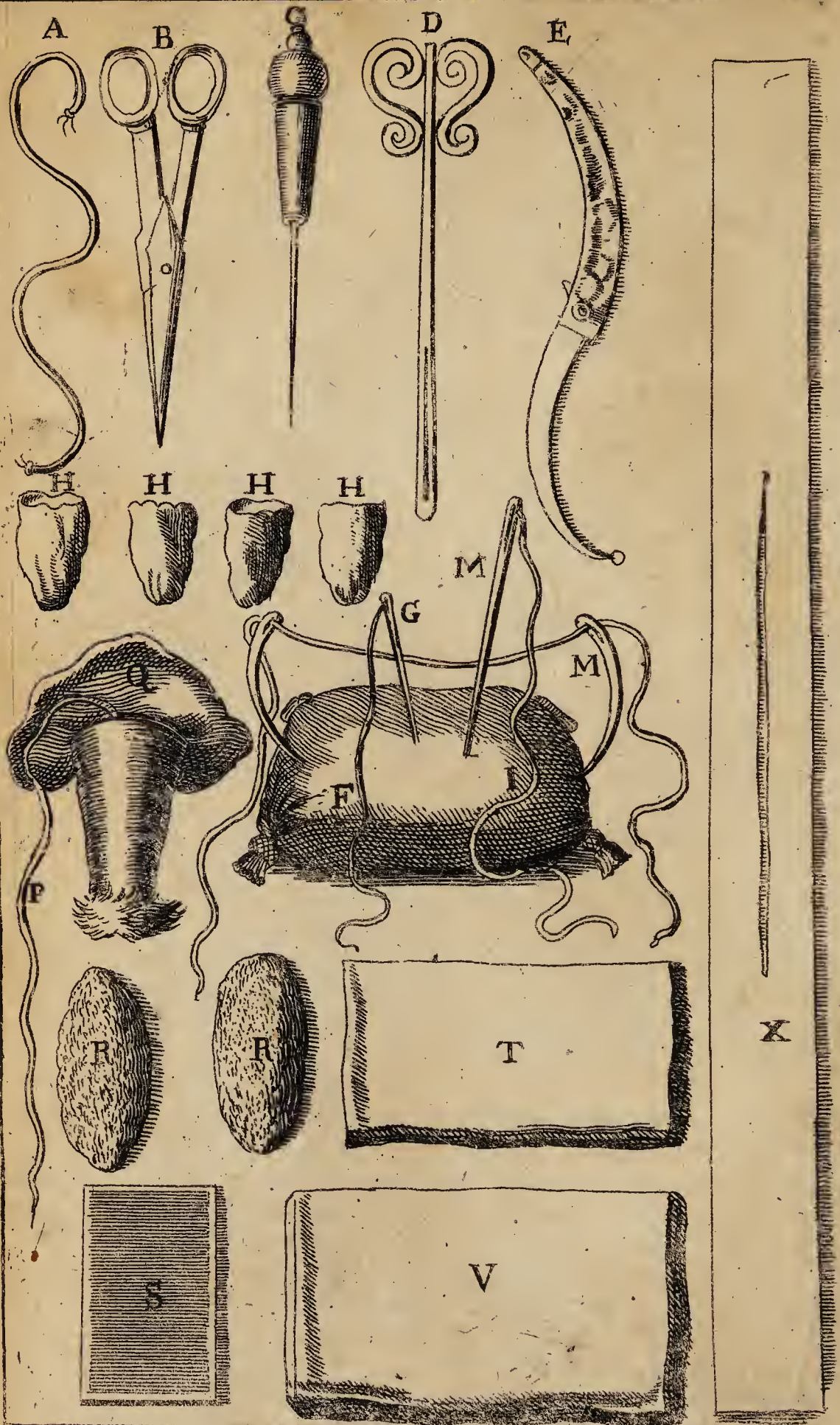
Sometimes the Navel-string growing dry, renders the Ligature too black, and occasions the issuing forth of some drops of Blood by the different Impulses of that of its Arteries, which makes continual Efforts, in order to reassume its ancient Course; in which case the Ligature ought to be drawn tighter; wherefore the Chirurgeon ought not at first to cut the Threads near the Knots; but, on the contrary, should leave them a little longer, that he may wind them yet some Rounds about, if Necessity require it.

When the Chirurgeon has done what we have just mention'd, he leaves the Remainder to Nature, who has the Care of separating this String, which she accomplishes in seven or eight Days: It must always be left to fall of its self, without forcing it by too much Impatience, for fear, lest tearing it off too soon, and before the Arteries are re-united and shut, there should happen any Loss of Blood.

*A pernicious
Mistake.*

With regard to this Operation, there are but too many vulgar Errors, to which the Chirurgeon ought not to give any Ear. Some Women pretend, that before the making of the Umbilical Ligature, all the Blood in the Vessels of the Navel-string ought to be returned forcibly into the Child's Belly; this would prove a pernicious Practice, which we should carefully avoid; for the Blood, refrigerated by the exterior Air, being commonly clotted, would be capable of producing Obstructions, and putrifying in the Body. There are others who affirm, that a Woman shall have as many Children, as there are Knots along the Navel-string; to which they also add, that the red ones signify Boys, and the white ones Girls; but these Knots being occasion'd solely by the Dilation of the Vessels, which are fuller of Blood in one place than another, 'tis a Mistake to think that they betoken





ken the number of Children which a Woman shall have, since we see as many in the Navel-string of the last Child, of which one Woman is delivered of at the Age of forty or fifty, as in that of the first Child of another, deliver'd at eighteen or twenty. Others will have the Ligature made quite close to the Belly in Girls, and more distant in Boys; because they imagine, that the Parts destin'd to Generation, having an Affinity with the Navel-String, will for the future be proportionable to the Portion of that which is then left. But you ought not to have any regard to these Prejudices, which cannot be allow'd to be any thing better than Gossip's Chat.

Of GASTRORHAPHY.

THough *Gastrorhaphy* be one of the most considerable Operations, 'tis yet only a *Suture* apply'd to Wounds of the Belly: The Word is compounded of two Greek ones, viz. γαστήρ, *gaster*, which signifies *Belly*, and ῥαφή, *Suture*; and as this kind of Sewing is not only practis'd on the *Abdomen*, but also on the *Stomach* and *Intestins*, 'tis necessary that the *Chirurgion* should be instructed on the Wounds which happen to those parts.

Etymology of the Word.

The *Wounds of the Belly* are of two sorts; they are either *penetrating*, or such as go no farther than the *containing parts*, without entring the *Cavity*; when they require no other treatment with regard to their Cure, than what is apply'd to simple Wounds of all the other parts of the Body.

Of *penetrating Wounds*, some are without, and others with Læſion of the contain'd parts; those which do not prejudice the internal parts may also be dress'd like simple Wounds, endeavouring to procure the most speedy Re-union possible; but as for those in which the contained parts are wounded, the *Chirurgion* must carefully examine those parts which may be hurt; for such Wounds have all the particular Signs which point out to us the *Viscera*, and places to which the Blow was extended.

Of all these Wounds, some are accompanied with the issuing forth of some part without Læſion, and others with the breaking through and Læſion together; and as well in the one as the other, the part which fallies out is either the *Epiploon*, or the *Intestine*, or both together. Further, in these sorts of Wounds, either the parts are lately issued forth, the *Intestins* are not yet swelled, nor the *Epiploon* putrified; or, on the contrary, the Parts having been long exposed to the Air, and the *Intestins* then tumefied, require *carminative* and *discussive* Remedies to assuage them; and as for the part of the *Epiploon* which is started out and corrupted, the *Chirurgion* ought to apply a *Ligature*, and separate it from the other, as I shall presently shew you.

The Instrument which made the Wound to be examined.

The lower Venter may receive a Wound from every thing which is capable of giving it in any other part of the Body; but in whatever place the Wound happens, 'tis always prudent to demand a Sight of, and examine the Instrument with which the Patient was wounded, as was done in the case of *Henry the Third of France*; where the Knife which the Traitor made use of was found to be a Foot long, and bloody for the breadth of four Fingers; which made the Chirurgeons conclude, that the Intestins being peirced, had regard to the situation of the Wound, which was confirmed by the Accidents which followed, and his Death eighteen Hours after the reception of the Stab.

How we discover the penetration of a Wound.

We discover when a Wound is *penetrating*, or *penetrated* by the Probe, or what issues from it, as the *Epiploon* and Intestin: And because those Wounds which penetrate may hurt all the parts contain'd in the lower Venter, it depends on the Chirurgeon to distinguish, by the Signs which appear, which are those which are touched. What I shall next lay down, shall be almost all the general Signs on which we cannot easily be deceiv'd.

By its situation.

The situation of the Wound gives the Chirurgeon the first Notion of the part which may be hurt; since knowing by Anatomy which they are which are placed in each Region of the Belly, 'tis probable, that if the Stroke had been received, for instance, in the right *Hypochondrium*, 'tis the Liver which is attack'd; and if the Wound be on the Left, the Milt will receive hurt; and so of others.

By its Excretions.

The *Excretions* are certain Marks of the part wounded; for instance, if 'tis the Liver, a great quantity of Blood, of the Colour of Vermilion, will issue out of the Wound; if the Milt, there will not come out so much, but 'twill be blacker and thicker, because that Humour is less attenuated, and has continued longer in that last part; if the Stomach, the Aliments will run out; if the small Intestins, there will proceed a white and chilous Substance; the great Intestins being pierced, we find evacuated *fœculent* Matter, like the Urine of the Bladder when opened.

Accidents proper to the wounded Parts.

The Wounds of the several parts of the Venter have also each their proper Accidents, which enable us to distinguish them from one another; by proper Accidents we mean those particular to each Organ. The wounded Liver afflicts the Patient with sharp Pains, which extends to the Ensiform Cartilage; the Reins, the Ureter, and the Bladder, are never wounded, either together, or apart, without being attended with a difficulty in the Urinary Excretion, or the Patient's avoiding Urine tinged with Blood, and sometimes pure Blood: Wounds in the Stomach occasion Hiccoughs, Vomitings, Contorsions of the Belly, and Sweats accompanied with the Refrigeration of the extreme Parts; and Wounds of the Intestins, especially the small ones, are accompanied with frequent Debilities, extreme Pains, Suffocations,

cations, Nauseatings, a continual Fever, insupportable Thirst, and great Inquietudes : All these Circumstances are by *Guillemeau* related to have follow'd the Wound of *Henry the Third, King of France and Poland*.

Tho' a Wound happen not to be the greatest, it yet very frequently happens that the Intestin issues forth : An able Artist knows, at the bare sight, whether 'tis touch'd or not ; though it should even be in a different Part from that which comes out. When the Intestin flags and grows flaccid, 'tis a sign that there is an Aperture, through which its Inflammation has escaped ; but when 'tis extended and tumified, 'tis an evident sign that 'tis not pierc'd.

Certain sign of the Intestin being wounded.

We ought not to be surpriz'd, if the Intestin very frequently issues forth without the Epiploon ; the Reason of which is easie to be conceiv'd ; 'tis, that the Epiploon commonly descends no lower than the Navel, whence in Wounds below that part this unctious Net does not appear without, unless in such Persons where it takes up a larger Extent ; it falling as low in some, as the Scrotum.

Why the Epiploon does not always come out with the Intestin.

We shall here treat of the Cure of no other Wounds, but those of the Intestins and Epiploon, by reason 'tis them alone which require the Operation that I am about to teach you. But before a Chirurgeon undertakes them, he must remember to give no other than a doubtful Prognostic concerning them ; for of these Wounds, there die more than escape : He must also be informed, that the small Intestins are more difficult than the large, as well by reason of the tenuity and tenderness of their Substance, which is less carnous, and consequently not so fit to cicatrise, as because what passes amongst them being more liquid, does more easily escape through the Wound.

Prognostic of these Wounds dubious.

Let's now proceed to the manner of re-placing the Intestin when 'tis started out, and is not wounded ; after which, we shall treat of the Intestin when wounded, and when Suture is requisite to its Cure.

A Chirurgeon, when he finds the Intestin is got out, as I have already hinted to you, and, by its extraordinary Tumefaction, discerns that 'tis not pierc'd, ought to return it into the Belly as soon as possible, after he is informed that 'tis just come out ; for 'tis then easier to re-place it expeditiously, especially if the Wound in the Abdomen be large enough, and he perform it in the following manner. The Patient must be plac'd in such a Posture, that the Wound be rais'd to the highest place possible ; if it be above the Navel, he may stand, or sit ; if below, he must be put to Bed, and his Buttocks and Thighs rais'd much higher than the rest of the Body ; when on the right side of the Loin, the Patient must be laid on the left ; and on the contrary, if the Wound is on the left, he must be turn'd on the right ; to the end, that in these Postures the rest of the internal Parts don't push towards the Wound : Then, with the two Fore-Fingers, and not with Wax-Candles, as some Ancients will have it, the Chirurgeon must, by

How to re-place the Intestin.

To be observ'd in this Practice.

little and little, thrust the Intestin into the Belly, taking care not to withdraw the Finger which is within, before that without be entred, for fear lest that part of the Intestin which is thrust in, not being continually detained by one Finger, don't instantly flie out again. This Operation must begin with thrusting in that part of the Gut which came out last, and end with returning that which first started out, that each part of it may be restored to its usual Place. If the Patient can continue breathing outwards, during the thrusting in the Intestins, they will enter more commodiously, by reason that during the Expiration the Diaphragma drawing upwards, the Cavity of the Lower Venter will thereby be enlarged. In the mean time, the Chirurgion must cause the Lips of the Wound to be held by a Servant with both hands, to hinder the Intestin from issuing out again: And lastly, the Patient must be stirred and shook, that the Parts may re-assume their natural Position.

The Patient facilitates the Operation by forcing his Breath outwards.

But if the Intestin has been long out, and is so swell'd and enlarg'd, that 'tis impossible whilst in this Condition, to thrust it into the Abdomen; the re-placing of it must be procur'd by one of the two, either *dissipating the Ventosities*, or *enlarging the Wound*.

Cause of swelling of the Intestin.

In order to *dissipate the Ventosities*, whose Cause is always the Impression of the Exterior Air, which, refrigerating the Intestin, occasions an Obstruction in its Vessels, and excites in the carnous and tendinous Fibres, Convulsions which swell it: This Organ is fomented with Water and warm Wine, when neither Convenience nor Time will allow the preparing of Fomentations of thick or decay'd Wine, Anise, Fennel, Camomile and Melilot, with the Addition of a little common Salt. If the Chirurgion happens to be in the Camp, where nothing is to be gotten to warm and mollifie the Intestin, he ought to oblige the Patient to make Water, and with the Urine, whilst warm, foment this Part, in order to dissipate the Wind. Some Authors prescribe the applying to it Animals, as little Dogs cut open alive; and *Ambrose Saré* proposes the making of several puncti-
ons on the Intestin, with the Needle C; of which Practice he assures us to have seen good Effects; but the Needle must be round, that it may only remove the Fibres of this Canal without cutting them, as it would do if it were edg'd, flat, or triangular.

First way of Remedy.

The Needle, C.

Second way.

Four Considerations to be made.

The first.

If this first way, being try'd in all its Parts, doth not sufficiently succeed to return the Intestin, the Chirurgion must proceed to the second, which is to enlarge the Wound: To the methodical Performance of which, four things are requisite to be examined; 1. The Place to be enlarged; 2. The size of the Aperture to be made; 3. The Instruments to be used; and, 4. How to apply to the making this Enlargement.

As for the first Point, special Regard is to be had to two Particulars; first, That the Intestins be prevented issuing out at the dilated Place; and secondly, That the Wound may easily conglutinate

minate and close, without any Accidents supervening to obstruct, and that the Chirurgeon avoid them as much as possible, in keeping as far distant as he can from the white Line, which is form'd only of tendinous and nervous Parts.

With regard to the second Point, which concerns the Extent *The second.* of the Aperture, it ought to be proportion'd to the bulk of the Intestin, which is without, and is design'd to be return'd, carefully avoiding the enlarging the Wound any more than is exactly necessary to allow Passage to, and assist in the restoring of the Part to its place.

The third consists in the choice which ought to be made of *The third.* the Instruments which are of two sorts, viz. a *Probe*, D, and an *Incisory*, or *Incision Knife*, E. The *Probe* must be hollow'd, or channell'd, long, strong, and, for neatness-sake, of Silver. The *Incision Knife* us'd in this Operation should be curve, edg'd on one side, and flat on the other, being above all provided with a Button at the end, for fear of pricking the Intestin.

Lastly, the fourth Article regards the *modus faciendi*; to dis- *The fourth.* charge which, the Chirurgeon tenderly places the Intestin at the part of the Wound, opposite to that which he would dilate, and extend farther; he covers it with a Bolster dip'd in warm Wine, and causes it to be held down by a Servant; then he takes the channell'd *Probe*, and dextrously introduces it into the Wound; then turns it from one side to the other, carefully avoiding the engaging the Intestin betwixt the *Peritonaum* and the *Probe*; this *Probe* is held in the left hand, in order, by it, to raise outwards the Place where the Incision is to be made; then, with the right hand, he pulls the Intestin a little, in order to be secure that 'tis wholly disengag'd; after which, taking the *Incision Knife* in his last mention'd hand, he slides the Point into the Channel of the *Probe*, and at once, or several times, equally cuts the *Peritonaum*, the Muscles and the Skin: It must be observ'd, that it is the body of this Instrument that cuts; I would say, that part of it which is edg'd from the Haft, to some distance from the Point, which ought not to cut at all, because it ought always to remain in the Channel of the *Probe*, and the *Incision Knife* is to be drawn out by pushing the edge against the Place to be cut.

The Wound being sufficiently dilated, the Intestin is to be returned into the Belly, in the manner which I have already shew'd you. This is what relates to the Intestin when 'tis not wounded: Let's next examine what ought to be done when 'tis.

When, by the Signs I have observ'd to you, the Chirurgeon *Practice,* is convinc'd that the Intestin is pierc'd; if the Wound be not *with re-* in that Portion of it which is without the Body, he ought to *gard to the* draw out more of it, in order to endeavour to find where it is; *Intestins* when discover'd, he considers whether it be small or large; whe- *open'd by* ther but one, or several. When 'tis very little, or not larger *Wound,* than a Wound with a Bodkin or Penknife, 'tis needless to sew

it; Nature, seconded by a very exact Dyet, is able to cure it: But if it be large, as those made by the thrust of a Knife or Sword, or there be two or three, as it sometimes happens, the *Furriers Suture* is to be apply'd.

Of the Furriers Suture, or most rais'd Stitch.

This Suture is so call'd, from the Furriers using this way of sewing up those Rents made in their Skins in flaying of them: Some have given it the name of a *rais'd Suture*, by reason the Stitches rise one above the other, on the Lips of the Wound. The Chirurgeon commonly takes raw flat Silk, F; it must be flat, such as Women use in their working Tapistry, that each Stitch being the broader, may the better stop the Aperture of the Wound; it must be raw, that is, not dyed, because several Drugs enter into the Dyes, which might envenome the Wound by moistning it with them: He makes use of the Needle, G, which is streight and round, for the Reasons I have already hinted.

Linnen Thimbles.

There are prepar'd four *Thimbles*, or Finger-stalls made of Linnen, H H H H; two of which serve to put on the Thumb and Fore-finger of one of the Servant's hands, and the two other for the Thumb and Fore-finger of the Chirurgeon's left hand: These Thimbles are used to prevent the Intestins slipping through the Thumbs and Fingers with which 'tis held, which 'twould certainly do without them. The Operator takes in his right hand the Needle threaded with the Silk, and runs it a-cross the two Lips of the Wound at a higher place, and a little below makes a second Stitch in the same manner, not forgetting to twist the end of the Silk under the second Stitch, rather than knot it: He continues on as many Stitches as the length of the Wound requires, and leaves betwixt each the distance of about the thickness of a Crown Piece, ending by a Stitch beyond the end of the Wound, as he began a Stitch beyond its Circumference, that it may be sewed up so exactly close, that there remain no small Orifice through which any thing may escape; and at last he fastens or twists the Silk at the last Stitch, that he may not be oblig'd to tye any Knot.

Of the Stitches.

Precaution to draw out the Silk.

'Tis, by way of Caution, recommended to the Operator, to leave out, at the Wound of the Belly, an end of the Silk about a Foot long, after the Intestin is put in again, that he may have it in his Power to draw it out, when the Wound of the Intestin being cicatriz'd, it becomes intirely separated from it; this is a part of the Practice which must not be omitted; it is customary, at the finishing of the Suture, to cut the Silk close to the Needle, and leave the end of it at the end of the Suture.

A Method preferable to others.

But I affirm it to be much better to leave the end at the beginning; and my Method is thus: At my first Stitch, instead of drawing through the whole length of the Silk, I leave hanging there an end of about a foot and half, and draw no more thro' than I judge sufficient to sew the Wound; I fasten the two ends by twisting them on the Stitches nearest them, as I have told you, and find, by this way, I gain two Advantages; one is, that the sewing being sooner finish'd, the Intestin is less time expo-

fed to the Injuries of the Air, and sooner put into its place; and the other is, that we hereby spare the Patient the Pain which the drawing through the length of a foot of Silk, as many times as there are Stitches, must occasion.

Some Authors order a little *pulveriz'd Mastic* to be laid on *Mastic use-* the Suture, in order to conglutinate it the sooner; but, believing *less.* it useless, and considering that though 'twere necessary, 'twould not long remain there, I advise the returning in the Intestins the first Moment possible, because the natural Heat of the Belly will do them more good than all the Remedies which can be apply'd.

As soon as the Intestin is restored to its place, the Chirurgeon thinks of accommodating the Epiploon, when displac'd or disorder'd: but first he sees whether it be corrupted or broken, which *Replacing of the Epi-* always happens when it has continued a small time without the *ploon.* Body. He must then tye it, and separate that Portion of it which is putrified, before the replacing it in the Body; to per- *Manner of* form which Operation methodically, he takes a course waxed *binding it.* Thread, or a small String, I, at the end of which he has a streight Needle, K, threaded. He draws the Epiploon a little farther out of the Body than it is already, that he may not make his Ligature upon that which is corrupted; he then binds this Membrane twice or thrice round the sound part with the String, drawing the Ligature moderately tight, for fear, lest if too hard, it should cut in the performance, or in leaving it too slack, the Vessels which are very numerous should pour out their Blood in the Cavity of the Belly. He runs the Needle through a-cross the proper Substance of this Organ, that the Ligature may not slip; then he cuts it off within half a Finger's breadth of the Ligature, leaving out of the Body an end of the String as long as that of the Silk, to draw it out by when the Scar is fallen off. Next he puts the Epiploon into the Belly; and, in order to enable him to extend it over the Intestins, which is its natural place, he a little moves and shakes the Patient. Thus with regard to the Epiploon, this is the method taught us by our Predecessors, and followed to this Day by the greatest Practitioners; but Monsieur *Mareschal* assures us, that he has several times replaced the Epiploon partly come out, without either Li- *Practice of* gature or Extirpation, and no ill Accidents have ensued it. His *Monsieur* great Practice, as well in the Hospital of *la Charité* at Paris, as *Mareschal,* in the City, and his exalted Reputation, which have raised him *principal* to the highest degree of Chirurgery, don't allow us to doubt of *Chirur-* the Truth of what he advances; wherefore the young Chirurgeon cannot fail in imitating him. After having put into order the Intestin and the Epiploon, a Servant should with both Hands hold the two Lips of the Wound in the Abdomen close to each other, that the Organs may not again fly out, whilst the Chirurgeon disposes himself to perform the Suture of the Belly. Authors propose to us several Methods to perform it. *Guido* will have us to sew on one side of the Wound the Peritonæum with *the*

the Muscles; and that on the other we should make that the Muscles touch the *Peritoneum*; because, as he asserts, the *Peritoneum* re-unites better with them than without them. *Albucrasis* makes use of the Tortile Suture; *Lanfranc* approves of that which is knotted from two Stitches to two Stitches; *Celsus* prescribes two Curve Needles threaded with the same Thread, that they be passed thro' within and without the Wound, and that then changing Hands, the Operator make as many Stitches as the Wound requires. There are others who advise us to the feathered or wedged Suture; but, with *Galen*, I prefer the intersected one, which is less troublesom, and the securest of them all. It must be performed thus.

The Manual Operation.

Useful Observations.

(a) That is the Omentum.

The Chirurgeon must have two large Curve Needles, M, M, threaded with the String N, which is better than Thread, because being courser it will not cut the Lips of the Wound. He puts his Fore-finger into the Wound, in order to hold the *Peritoneum*, the Muscles and Skin together; then with the other Hand he thrusts one of the Needles thro' into the Belly, guiding the Point on his Fore-finger, to avoid pricking the *Epiploon* (a) or Intestins: He pierces from the inside outwards one of the edges of the Wound far enough forwards, that the Suture may hold the better, and resist the continual Motion of the inferior Venter; and having drawn out his Needle on the outside, he takes the other Needle, with which he pierces the other side of the Wound in the same manner, and with the same Precaution as at the first Stitch; observing, that if he held the first Needle in the Right Hand to run the Thread from the Right to the Left, he ought to draw the second thro' from the Left to the Right with his Left Hand. If the Wound is large enough to make two, three or four Stitches; the Needles must so many times be threaded with another String, which must be run thro' in the same manner with the first; after which there must be as many knots made as there are Strings, and they must be made double on the superior Lip, by passing in the first Stitch the String twice thro' the same loop, which is called the Chirurgeon's knot, because it holds better than any other.

How the Operation is finished.

When the Chirurgeon happens to be obliged to take several Stitches, he begins them at the lower part of the Wound, and must observe, that they ought to be closer to each other in Sutures of the Belly, than in those of any other part, by reason of its motion; but before the knotting of the Strings, a large Linnen Tent O, ought to be applyed at the lowest part of the Wound, and to the head of this Tent must be fasten'd a Thread P, tho' it has a Head Q, made of the same Linnen, for fear lest it should sink into the *Abdomen*. 'Tis very necessary there, as well because it secures a Passage outwards for the extravasated Blood, Pus, and other exotic Bodies, as by reason that it keeps the Wound open till the Intestin and *Epiploon* are healed, when

when the Thread may be drawn out; this ought to be short, that it may not penetrate farther than the *Peritoneum*, and its point must be pulled or unspun, that it may not hurt the *E-piploon* nor Intestins, when they happen to rise against it.

The Wound, Tent and Knots of the Suture are usually covered with flat Pledgets, R, R, spread over with Balsam; after which, over them all, is laid a large Astringent Plaister S, to which is next added a Bolster T, moisten'd in hot Wine, and all of them are covered with the Circular Bandage made of a Napkin V, affixed to the *Scapular* Bandage X. 'Tis proper to make use of an *Embrocacion* of Oyl of Roses and Brandy to the whole Region of the Belly; and if for the first emollient and resolvent Fomentations are made, they will prevent Tension and Inflammation, accidents which frequently attend these sorts of Wounds.

*Dressing of
the Wound
after the
Operation.*

Some Authors direct the Practice of a like Suture on the Sto- mach; they pretend that that part being more substantial and fleshy than the Intestins, easier heals; but the prodigious quantity of Nerves by which it is united, and the raging Symptoms of a wounded Stomach, make me rather fear the Death of the Patient, than hope for any good Success from this Method; and that the rather, because there appears to me a great deal of difficulty, not to say impossibility, of sewing the Stomach, by reason of its situation, and its ordinary motions of Contraction and Dilatation: Nevertheless, it being our Duty rather to try a dubious Remedy, than to abandon the Patient to a certain Disaster, I am of Opinion that the Chirurgeon ought to do his utmost to sew this Organ, especially if the Wound be in a place where Suture can be essay'd.

*Sutures
practicable
on the Ven-
tricle.*

Some Chirurgeons allow the Suture of the large Intestins, and inhibit that of the small when wounded; but I should be glad they would shew us how to sew the great Guts, which we know to be so firmly fixed to their place, that they never come out thro' any Wound; if the Practitioners cannot help admitting Sutures of the Intestins, they must grant them to be rather used in the small ones, especially in the *Jejunum* and *Ilium*, since they are the only two Guts that cannot start out of the Belly.

There are others which will neither sew the great nor small Intestins, alledging a great Abstinence to be a more secure way than Suture. I allow, that after Suture a very sparing Diet is necessary; but if the Wound be but a little wide, the *Peristaltic* and perpetual Motion of the Intestins will every moment separate the Lips of the Wound, if not fasten'd together by Suture; so that their re-union cannot be accomplished by Suture alone. 'Tis yet true, that when one of the great Intestins is wounded, we are obliged to depend solely on this means, by reason of the impossibility of applying any Suture to it; and, indeed, I have cured several Patients whose great Intestins were pierced, the *Fæculent* Matter issuing thro' the Wound, by con-

fining

fining them from all other Subſtance, beſides two Spoonfuls of (a) *Conſummatum*, and the Yolk of an Egg, for the firſt Days.

An extra-ordinary Cure.

What happened to a Soldier in the *Invalides* is too ſingular to amount to an Inſtance in Practice, ſince 'twas Nature alone which wrought his Cure, in which the Industry of the Chirurgeon had no part; ſhe her ſelf provided a Sink through the Wound in his Belly, to which the wounded Inteſtin ſticking faſt, he daily, through that Aperture, voided his Excrements; which paſſing in voluntarily, he was forced to keep a Tin Box at that Place to receive them; he no longer voided them by the *Anus*; and what thus came from him through the Wound, had no Stench, by reaſon the pure *Chyle* was not yet wholly ſeparated, and that the groſſer *Sulphurs* had not time to diſcover themſelves by the Fermentation which attends evacuated Excrements.

Of the Uſe of Gliſters.

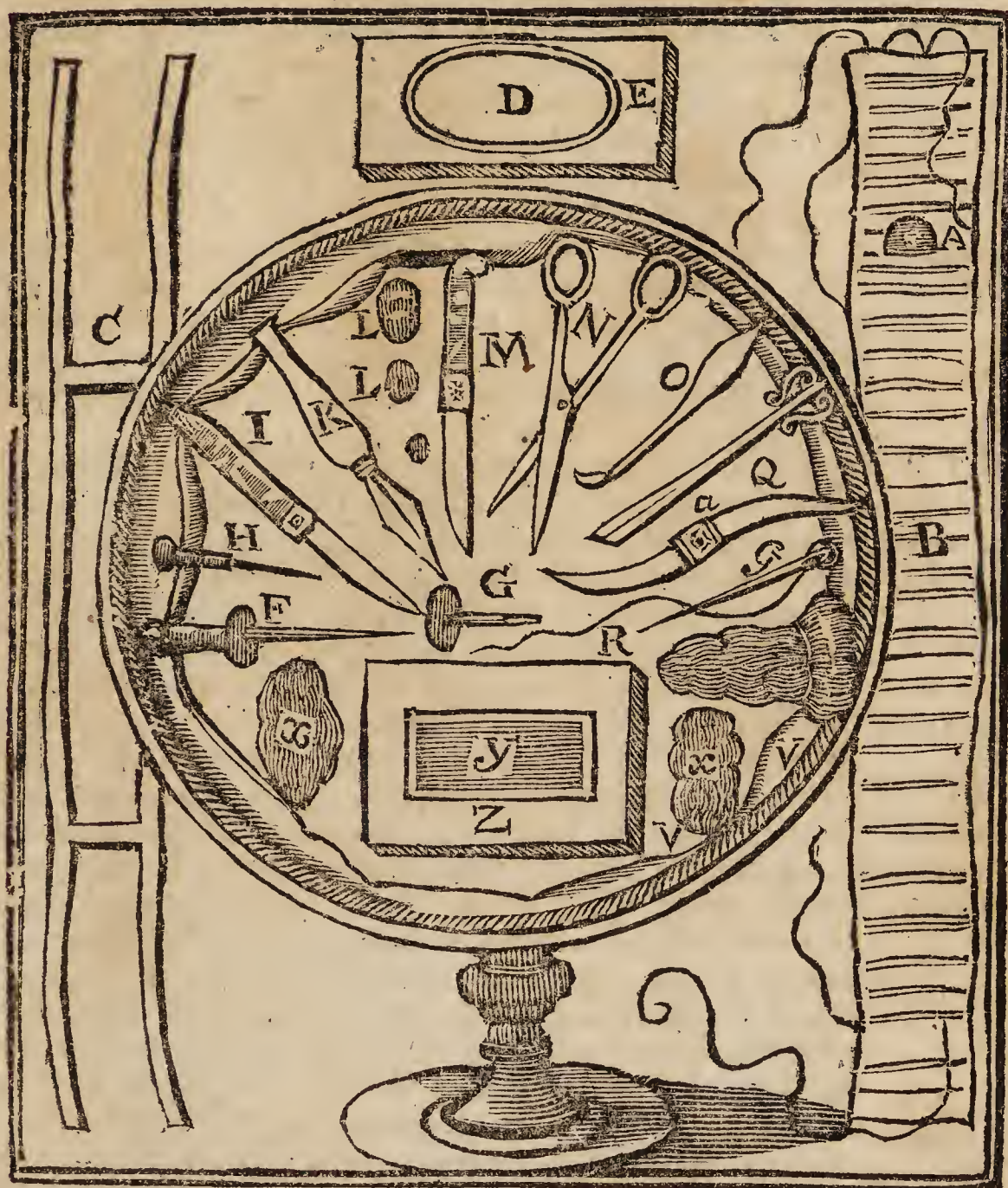
The Ancients forbid Gliſters in Wounds of the Inteſtins, and there are ſome Moderns which approve them; theſe laſt ſay, that theſe Remedies are cooling, and ſerve inſtead of a *Balneum Mariæ*, to calm the Emotion of the Blood, and ſtop the Progreſs of the Symptoms. Theſe two Opinions are eaſily reconcilable, being both founded on Reaſon; Gliſters ought not to be applied, when 'tis the great Guts that are wounded, becauſe they will run out at the Wound, and thereby hinder the Re-union: But they ought to be given when the Aperture is in the ſmall Inteſtins, becauſe they not being able to reach to the Wound, by reaſon of the *Valvula* of the *Cæcum*, can do no hurt.

Moſt advantageous Poſture of the Patient.

To conclude what I have to demonſtrate to you on the *Gaſtroſtrophaphy*, there remains only to add the Situation of the Subject: The beſt Poſture is to lay him upon his Wound, that the other Parts contain'd in the Belly reſting on thoſe which are wounded, may keep them in Repoſe, which haſtens their cicatrizing; beſides, this Poſture facilitates the Excretion of the *Pus* and Matter diſperſed in the lower Venter; for though the Patient were laid in any other Poſture, yet in dreſſing him, after taking out of the Tent, he ought to be turn'd on the ſide of the Aperture, in order to evacuate what may be contain'd in the Cavity. When the Threads are fallen off, and nothing remains but cloſing the Wound, the length and bigneſs of the Tents muſt be daily decreaſed, and then the Patient is to be directed to lye on his well Side.

(a) *Conſummatum* is a Liquor drawn from all the Parts of a Hen, except the Head, Feet and Fat, cut ſmall, in a well ſtopped Veſſel in *Balneo Mariæ*.

FIGURE X. Of the EXOMPHALOS



THE *Exomphalos* comprehends all the Tumours incident to *Etymology* the Navel; the Word is compounded of *Ex* or *Extra*, of *Exom-* which signifies without, an *Omplalos*, which is the Navel, this phalos. Disease being a Protuberance of the Navel, which extends outwards beyond its due Bounds.

The *Exomphalos*, which comprehends all Protuberances of the Navel, reduces it self to two different kinds; one of which is of Tumours, which form themselves of Parts, and the other results from a Mass of Humours; and these sorts of Diseases receive different Names, with regard to the several Parts, or the various Humours which they cause.

Those

Difference
of this Dis-
ease.

Those occasion'd by the Parts are of three sorts, one is call'd *Enteromphalos*, which is when the Intestin comes out; the other *Epiplomphalos*, which is the Protuberance of the *Epiploon*; and the third *Entero-epiplomphale* is, when that of the Intestin and *Epiploon* concur at the same time.

Four sorts
of it.

Those which are caused by Humours, subdivide themselves into four Species; the first, call'd *Hydromphalos*, is occasioned by Water; the second, by Wind, is nam'd *Pneumatomphalos*: The *Sarcomphalos*, which is the third, is nothing but hardened Flesh; and the fourth, that is *Varicomphalos*, consists in the Rupture or Dilation of some Vessels.

Another
sort.

To the two first general kinds of *Exomphalos*, Authors add a third, which is composed of both the former, viz. of the Parts and Humours together. When the Tumour is produced by the Intestin and Water, 'tis called *Entero-hydromphalos*; and when by the *Epiploon* and the Flesh, 'tis nam'd *Epiplo-sarcomphalos*, and so of others.

This Dis-
ease hap-
pens by the
dilation of
the Peri-
toneum,
or by Rup-
ture of that

All the Ancients tell us, that these Tumours proceed either from Dilation or Rupture, depending on the Internal or External Cause; but some Moderns don't agree to this Opinion with regard to the Rupture, but affirm all of them to be produced by the sole dilation of the *Peritoneum*, which, according to them, may extend and stretch to a Degree sufficient to form these Tumours, how large soever they are, since it dilates yet more in Dropsies.

Mem-
brane,
especially
on the right
of the Na-
vel.

These differing Opinions deserve a particular Discussion: But yet I acknowledge but one Cause of the *Exomphales*, namely Rupture, I mean, of the *Exomphales* of Parts; for the Dilation, which the Ancients and some Moderns admit, seems to me impossible, with regard to the part of the Navel; which being no more than a Knot made at that part after the Ligature of the String, can no more be at Liberty to lengthen it self, than the Scar of a Wound in the Skin: And to clear what I say, no more is necessary, than to observe that the Navel is formed by the Reunion of the Umbilical Vessels, which, after the Birth, contract themselves, and in drying, degenerate into Ligaments; and that several Vessels of the *Peritoneum* enter into its Composition, as also some *Aponeuroses*, the whole together so mixed and interwoven, that it appears to be no other than one continued Body, incapable of any ways extending it self.

Experience
proves it.

I own, that the *Peritoneum* may stretch in its whole Extent, but not in the Navel; and I dare venture to affirm, that I have Experience on my side, having opened several of these Tumours both in living and dead Bodies, where I never could find that the *Peritoneum* internally extended it self, as it must have done, if these mentioned Tumours were produced by Dilation. After having cut the Skin, I found no longer any Membrane, and thrusting my Finger into the Aperture which was at the Navel, it entred into the Cavity of the *Abdomen* without any Resistance; which

has

has confirmed me in the Opinion in which I persist, that Rupture is the sole Cause of *Exomphales*.

We must distinguish betwixt *Hernie*, or Ruptures of the Navel, and those of the *Scrotum*; for the *Peritonæum* extending it self to the Groins, to conduct the Spermatic Vessels to the Testicles, the *Epiploon* or Intestins are very aptly disposed to glide along with these Productions, and fall as far as into the *Scrotum*, and *Scrotum* without breaking the *Peritonæum*; but 'tis not the same in the Navel, which not being susceptible of the like Distention, cannot give Passage to any Part before 'tis broken, and all its Parts disuniting, permit the *Epiploon* or Intestins to come out.

Those who believe that *Exomphali* may be occasioned by the dilation of the Navel, ascribe the Cause to some Humour which incessantly sinks into it. But if this was true, these Tumours would have a very small beginning, and would augment by degrees; instead of perfecting all at once, as they commonly do, which happens, when, by some great Strain, the Knot of the Navel is broken and separated. My Opinion is also proved by Women being much more subject to them than Men, by reason that the violent Efforts and Pains in laborious Births, frequently break the Navel, in order to enlarge the Cavity of the Belly, which, at the end of their Pregnancy, is so hard stretched, as not to bear any farther Extension without a Rupture of the Part.

All *Exomphales* are not of equal bulk; there are some as small as an Egg; we find middling ones as big as a Fist, and sometimes larger than the head of a Hat: But these different Sizes do not hinder all of them proceeding from Fracture and Division, since they form themselves suddenly, and are proportion'd to more or less violent Strains, which more or less separate the Extremities of the broken Navel from one another.

Each *Exomphale* has its particular Signs which discover it, and with which the Chirurgeon ought to be perfectly well acquainted, in order to pass his Judgment, and cure each of them according to its Species.

The *Enteromphale* produces a Tense very hard Tumour, which grows bigger when the Breath is held, by reason that the *Diaphragma* pressing on the Intestins, forces them towards the Place which yields the most, that is on the side of the Tumour: 'Tis narrowest at its Basis, diminishes when pressed by the hand, and a small Noise is heard, which is caused by the murmuring terom- sound which the Intestins make in their Re-entrance of the phale. Belly.

The *Epiplomphale* does not change the Colour of the Skin, the Tumour is indolent, softer and larger on one side than the other, having a larger Basis; and when 'tis pressed to reduce it, the Part re-enters without any Noise.

The *Enteræpiplomphale* has some Signs common to both the other Species: The Tumour is bigger, more painful, and more uneven; and if, after having pressed in the Intestine, there yet remains

remains any thing in the Purse, we may be assured that the *Epiploon* forms part of the Tumour.

Character
of Hy-
drom-
phale.

The *Hydromphale* distinguishes it self from other Tumours of the Navel, by being soft, and yet very little obedient to the touch, neither diminishing nor augmenting by Compression, and appears transparent when looked at against the Light.

Of the
Pneuma-
tomphale.

The *Pneumatomphale* is a soft Tumour, easily yielding to the Fingers, and returning to the same Bounds as soon as the Compression ceases: When 'tis free, it appears always in the same shape and size, in what Posture soever the Patient places himself; and if it be struck, it resounds like a Foot-ball tight blow'd up.

The Sar-
comphale.

The *Sarcomphale* produces a hard Tumour, which does not yield to the Fingers when touched: It augments by little and little, in proportion to the growing of the Flesh which forms it. There are a sort of painful *Sarcomphale's*, and there are others which are insensible; and what Endeavours soever are made to force either the one or the other to re-enter, they are all vain, because these are Excressences of Flesh affixed to the Navel.

The Vari-
comphale.

The *Varicomphale* forms an uneven and various Tumour, whose Colour is brown and livid, by reason of the corrupted Blood which it contains; and when 'tis caused either by Dilation or Rupture of the Arteries, a Motion like that of *Aneurismes*, or Dilations of the Arteries, is perceptible.

Prognosti-
cations of
these Evils.

By the knowledge of these Signs, the Chirurgeon must make his Prognostic, considering all *Exomphales* as dangerous Diseases, by reason of the Accidents which accompany them, and those which may supervene; for in those produced by the Parts, there sometimes happen Stranglings which cause Death; and those which proceed from Humours, almost always require an Operation to cure them: So that all those who are afflicted with these sorts of Diseases, run a Risque of their Lives at least, unless cured by an able Chirurgeon: The Method of performing which, is as follows:

Cure of the
Exom-
phale.

When an *Exomphale* is formed by the Intestin, or the *Epiploon*, or by both together; these Parts are, as soon as possible, to be push'd back into the *Abdomen*: To succeed in which, the Patient must lye on his back, and having his Knees mounted, must remain a small space without respiring or crying, whilst the Chirurgeon, tenderly pressing the Tumour, thrusts in the Parts of both of them; beginning with the Intestin, which being situate under the *Epiploon*, ought to be first re-placed. He will know when this Reduction is finished, by the Diminution of the Tumour, and the Noise which that Organ makes in its Entrance; after which he presses the *Epiploon*, in order to oblige it to return to its Place, carefully avoiding all Precipitation in these Reductions, for fear of bruising the Parts, which he may conclude to be all returned into the Body when he sees the Purse empty.

If these Parts are so extended, that the sole Assistance of the *Obstacles* Chirurgeon's Hand cannot restore them, he must consider what *to this Operation* Obstacles oppose his Endeavours, in order to surmount them: *ration.* Those which I find are two; one is, when the Intestine is filled with either Excrements or Wind; and the other, when the Passage by which it came out, is grown too narrow. In these Cases the Chirurgeon must have recourse to Remedies, of which the most proper are *Carminative* to dissipate the Flatulencies, and *Emollients* to relax the Part which occasions the Stoppage. He ought to make use of an *Embrocation*, or irrigating fomentation on the part with Oyl of Lillies very warm, or Oyntment of Marshmallows, and apply a Cataplasme composed of all the mollifying and humerant Herbs, the Decoction of which may be given to the Patient by way of Drink or Glysters, and may also serve to make a small Bath to lay the Patient in.

How to surmount them.

These parts being mollified, the Chirurgeon must make another Effort towards their reduction; and the ordinary facility of succeeding in this second Attempt, convinces us that the use of Medicaments are not to be neglected. This performed, the Chirurgeon's next task is to prevent the starting out of what has been forced in; 'till which is accomplish'd, he has performed but half this Operation, which consists of two parts, one is to restore the parts to their place, and the other to keep them there when reduced.

This second part of the Operation is performed by a good circular Bandage made on purpose, and proportion'd to the bulk of the Person; the Band ought to be seven or eight Fingers breadth broad, and of a strong Cloth several times double: It must have in the middle B, a Semi-globular rising like a Mushroom, which is to be placed directly on the Navel, that by filling the Cavity the Chirurgeon may deprive the part of all opportunity of returning outwards; this Bandage ought to be sustained by a *Scapular*, or by the *Straps C*, made of white Fillet, and such as are used to hold up the Breeches of those whose Belly is too big. Before the Bandage the Plaister, D, *contrarupturam*, or the Rupture Plaister used in *Hernia's* must be apply'd, and above it must be laid a large Bolster E, moisten'd in hot Wine, in which several Astringent Ingredients have been boyl'd.

I have already told you, that the *Exomphales* produced by Humours were of four sorts, that Water, Wind and Blood, each of them formed a particular Species; and that the fourth was alledged to be that which resulted from Flesh: All which four sorts require different Methods of Cure; and frequently all Remedies proving vain, they of necessity require Chirurgical Operations in order thereto.

The *Hydromphale* may be dissipated by resolvent Medicines, *Medicaments for* especially whilst small: To this Tumour then ought to be apply'd a Sponge thoroughly moisten'd in Wine, in which has been *the Hy-* Gummin and Lupine Seeds, Camomile, Elder and Rose Flowers, drom-
Pons phale.

Pomgranate Shells, Laurel-berries and common Salt; and if, notwithstanding this application, the Tumour grows bigger, and intimates that no Cure is to be hoped for by Resolution, the Chirurgeon ought to prepare for a Punction in the middle of the Navel in the manner following. He is provided with an Instrument F of three Fingers length; and not larger than a small Quill, with a handle at one end, and a triangular Point at the other; in order to pierce the Skin, 'tis run thro' a very small Silver Pipe, or Tube, G, whose Cavity is proportioned to this Instrument, which is thrust into the midst of the Tumour; after which the Pipe is somewhat hardly pressed on, in order to force it into the Aperture, and withdrawing the Instrument which fill'd the Pipe, 'tis followed by the Water which the Chirurgeon suffers to run out to as large a quantity as the Patient's Disease or Strength will allow. The Pipe, which must remain in the Wound, must be stop't with a small Tent shaped like a Faucet, which must be drawn out as often as 'tis necessary to draw out the Water.

Manner of
the pricking
the Navel.

Difference
of this In-
strument
from a
Trocart.

This Instrument may be called a Trocart or Tap, from the resemblance which it bears to that which some Moderns pretend to have Invented to pierce the Belly of *Hydropic* Patients; and differs from it in no other particular, than that our Instrument only opens a Passage for the Introduction of a small Pipe; and the other being open according to its length, as a Pipe, does the Office of both Bodkin or Punccheon and Pipe. Both of them have their Uses; that of the Moderns is certainly the most convenient for Punctions of the *Abdomen*; but is not proper for those of the Navel; because there being nothing there but Skin, if the Instrument should be drawn out, and no Pipe left remaining in the Hole, 'twould not be in the Chirurgeon's power to prevent the Water's continually issuing out.

Treatment
of the Pneu-
marom-
phale by
Remedies.

The *Pneumaromphale* is cured by the external application of *Carminative* Ingredients: They dissipate the Wind, by attenuating, cutting and discussing, by their penetrating and acute Particles, the viscid and vaporous Matter which feeds the Distemper; for which reason we use *Rue, Rosemary, Laurel, Wormwood, Anise* and *Cummin-Seed, Rose, Camomile* and *Melilot* Flowers, Salt of *Tartar* or *Armoniac, &c.* of which are prepared Fomentations or Cataplasmes, according as the Chirurgeon judges necessary. If after the use of these Remedies, the Tension continues as tort as before, we have recourse to an Operation which barely consists in the taking a great Needle H, with a small handle, of the same sort with those with which we couch Cataracts; and with the point of this Needle we prick the Tumour in several Places, by which holes the Wind escapes, as when a Bladder is prick'd the Wind immediately flies out, and leaves it shrivell'd; and, if all the Wind don't issue out at these small Apertures, we reassume the use of the precedent Remedies, which will dissipate the remainder.

The *Sarcomphale* is very difficult to Cure, and before attempting it we ought to examin whether 'tis tractable or not. That which may be dealt with, that is, which affords some hopes of happy Success, is almost free from Pain: The Tumour is even, a little loose, and moderately hard: In this case we ought to make a long Incision of the Tumour with the Incision Knife, I, in order to discover the Flesh of which 'tis form'd; from which we must cut off and separate all the Parts to which it adheres, in order to take it out whole. But in dividing and dissecting this Flesh, we are obliged to cut the Vessels which feed it, which occasions an Effusion of Blood when they are large; we ought then to make use of *Styptic Water*, or *Vitrioline Powder* to stop it. The Wound must be dressed, during the first Days, with an *Emollient Digestive*, to procure its Suppuration, and afterwards with a sharp *Mundicative*, in order to corrode and consume the small Roots of this *carnous Excrescence*; which effected, we proceed lastly to cicatrizing, as in other Wounds. But if the *Sarcomphale* be intractable, that is, of a cancrus Nature, which may be discovered by its extreme Adhæson, the Restlessness of the Patient, by the stupifying Pains which he feels, and the *Sarcomphale Varicose* Nature of the Tumour, 'tis dangerous meddling with it; nevertheless, if curable, 'tis by the above-describ'd Operation. But yet I would not advise a Chirurgeon to undertake it, before having acquainted the Patient's Relations with the fatal Accidents which may attend the Operation.

The *Varicomphale* being caused by the Rupture or Dilatation of some Arterial or Venous Vessels, if the Tumour be small, Endeavours must be used to dissipate it by an astringent Remedy, prepared from *Bole-Armoniac*, *Dragon's Blood*, *Terra Sigillata*, i. e. *Lemnian* or seal'd Earth, and fine Flower incorporated with the White of an Egg; which is applied to the Part, and kept there by a somewhat hard Bandage. If the Tumour be large, and there be no hope left of curing it by Medicaments, it must be laid open in its full length by the Lancet K, the Blood emptied, and the Vitriol Balls, L, L, L, placed on the Apertures of the Vessels, as is practised in *Aneurismes*. The Scars are afterwards left to fall of themselves, the returning of the Flesh is procur'd, and the Wound made to cicatrize.

Before proceeding to any of the Operations required by these four sorts of *Exomphales* proceeding from Humours, we never fail to prepare the Patient by general Remedies, as Phlebotomy and Purgation; and after the Operation, to prescribe them a Regimen of Diet proper for their Diseases, by which Means we succeed in the Cure. But besides all these Species of Operations which I have just shewn you, there are yet other Occasions which oblige us to greater, as when the Intestin is started out, and cannot re-place it self; which exposes the Patient to a very great Danger of certain Death, if that Conduit be not immediately return'd into the Body.

A more
considera-
ble Opera-
tion to re-
medy cer-
tain Acci-
dents.

It frequently happens in *Exomphales* of the Intestins, that by neglect of keeping on the Bandage, these Parts are puffed up and swoln with Wind, and fill'd with Matter, which not being able to return to the same Passage by which they came out, they excite insupportable Pains and Vomitings, which continue as long as they remain without the Cavity of the *Abdomen*. So that when the Restoration of the Intestins is impracticable by the Means already demonstrated, we must proceed as in case of a *Bubonocoele*, viz. by Incision, laying open the Tumour with the Incision Knife, M, carefully avoiding the cutting any more than the Skin, or wounding the Intestins which are immediately under it. As soon as the Skin can be divided, the Chirurgion, by the Assistance of an excavated Probe, thrusts into the Wound the Scissars, N, with which he opens the rest of the Tumour; and if it be clogg'd with any Purses of Matter or Bridles, he cuts them with the Tooth-pick without a Handle, O, when the Intestin being discover'd, he draws it yet farther out, than it had before started, in order to allow the greater Extent to the Matter which it contains; he then introduces the excavated Probe, Q, into the Cavity, and holding it in the left Hand, raises it outwards, and in its Channel, with his right Hand, guides in the Point of a curve Incision Knife, a, with which he cuts whatever occasion'd the Stoppage. After which, the Aperture being large enough, he returns the Intestins by gently thrusting them into the Venter, and observing to put in those first which came out last: If part of the *Epiploon* be found in the Tumour, after having reduc'd the Intestins, we usually tye it with a double Thread, R; at the end of which is a straight Needle, g; and before making the Extimination, a long end of the Thread is left to come out of the Wound, in order to draw it out when Nature shall of her own accord have separated it. The Chirurgion must thrust into the Wound a great Pledget, or rather Stopple, T, of Lint ty'd to a long Thread, V, in order to draw it out, in case it should sink into the Cavity of the Belly. It must be observed, that the Thread of the *Epiploon*, and that of the Stopple, must be of different Colours; that if, by Mischance, the Stopple should be entred into the Cavity, upon endeavouring to draw it out, we don't run the risque of being deceived, and mistaking the Thread of the *Epiploon* for it. The Wound must be provided with Plegets, X, X, which must be cover'd with the Plaister, Y, and the Bolster, Z, in order to apply the Bandage in the same manner which I have shewed you in the *Gastrostomy*.

Danger of
this Opera-
tion.

You may from hence without Difficulty conclude, that this Operation is very dangerous, and almost always Mortal, by reason the Chirurgion is obliged to cut the *Aponeuroses*, or Tendons, which surround the Cavity of the Navel; notwithstanding which, I have once performed this Operation with good

good Success. The Patient was afflicted with such cruel Pains, that he desired Death every Moment; but as soon as the great Guts were put into the Belly again, he ceased to complain, and afterwards grew perfectly well. I have twice more performed the same, but to say the Truth, the Patients dyed. 'Tis also certain, that more dye under this Operation than escape; wherefore those who have *Exomphales*, ought rather to dispence with the Use of Shirts than Bandage.

The Ancients seem to have taken Pleasure in contriving different sorts of Operations for *Exomphales*, one more cruel than the other. Some would have this Tumour fastened betwixt two pieces of Wood, 'till it fell by Mortification: And several prescribed the passing through the *Exomphale* a double Thread; of which they make four Ends, tying two on one side of the Purse, and two on the other, drawing them tighter every Day, 'till the whole Tumour was separated from the Body. Others, after having run two Needles across this Tumour, order a small circular Incision on the Skin, that the String with which the *Exomphale* is bound, may the easier cut it. I don't believe, that those who have left us these Operations in Writing, had Courage enough to practise them; I have never seen them perform'd, nor shall I spend time in demonstrating them to you, because I am assured that they will contribute more to the inspiring you with a Horrour and Contempt for the ancient Chirurgery, than either to instruct you, or gratifie your Curiosity.

Cruel Methods of the Ancients.

Of the VENTRAL HERNIA.

ALL Tumours occasioned by the coming out of the *Epiploon* and Intestins, are called by the general Name of *Hernia* or *Hernia's*, and are distinguished by particular Appellations from the Places where they happen. When those Parts come out of the Navel, they are called *Exomphales*; when they occasion a swelling in the Groin, they are called *Bubonocetes*; when they descend to the *Scrotum*, they are term'd *Oscheocetes*; these two last Words being derived from *Bubon* and *Oscheon*, of which one signifies the Groin, and the other the *Scrotum*; and from *Cele*, descent; and when these Organs find Means to escape into some other part of the *Abdomen*, they are called *Ventral Hernia's*.

The Difference of Hernia's.

The Cause of these sorts of *Hernia's*, is a Rupture of the *Peritonæum*; for 'tis not probable that they can be occasion'd by a bare Dilation of this *Involucrum*, which adheres too close to the Muscles and *Anoneuroses* which it touches, to extend it self to the Degree requisite to form such large Tumours: 'Tis then always a Dilaceration which doth not happen on a less

Causes of this Disease.

Occasion than some hard Strain, or in those Places where an Abscess or Wound not having been perfectly cicatrised, have left the *Peritoneum* Subject to lacerate or open again.

Their
Signs.

The Signs which discover *Hernia's*, are that they always succeed the violence of some Strain; that they come all at once, that they re-enter upon a small Compression, and that being re-entred, the Tumour vanishes from the place where it was.

Of the
Cure.

Methods
prescribed
by Celsus.

Inconveni-
ences of
them.

Palliative
Cure.

To cure these sorts of Ruptures, we must endeavour to close both the Lips of this Wound in the *Peritoneum*, and to keep them in that posture that they may re-unite and grow together; but I see nothing more difficult, and the method which *Celsus* proposes to that end seems too rigorous for me to advise you to practise it. He says, that the Purse ought to be tied with a double Thread run across the basis of the Tumour; and that by binding it tight, the Wounds of the *Peritoneum* must be closed: Or that the Operator may make two Incisions in form of a Crescent, which must be opposite to one another, and join at their Points, in order to cut out the middle which they comprize, and which being longer than broad, will have the Figure of a Laurel Leaf; next he orders to be apply'd to this Wound a Suture like that in the *Gastrorhaphy*. Besides the Cruelty of these Operations, they several times fail; for one is not certain of re-joining a Wound in the *Peritoneum*, by causing all the Tumour to fall to Mortification by Ligature, since this Ligature can bind nothing besides the Skin and the Muscles, and not at all the other *Involucrum*, and we cannot be assur'd of succeeding better by Incision; farther, by reason that *Ventral Hernia's* always succeeding Wounds of the *Peritoneum* imperfectly cicatrised, 'twou'd be rashness to open them a second time, and undertake the Cure of this new Wound, when the Chirurgion was unable perfectly to cure the old.

'Twou'd then be very imprudent to propose or promise the ridiculous Cure of these *Hernia's*; they must be contented with a Palliative, and search after means to render this Disease supportable. To this end we make use of a good Bandage in form of a Girdle, which keeping the Parts subjected, will prevent the Augmentation of the Tumour, which is all that ought to be pretended for the alleviation of the Patient's Distemper.

FIGURE XI. Of the PARACENTESIS.



SOME Authors give the Name of *Paracentesis* to all Operations which are performed either by the Lancet or Needle, in what part of the Body soever, not excepting that executed on the Eye to couch a Cataract; founding themselves on the Etymology of the Word which comes from *Para*, which signifies beyond, and *Kentein* to pierce or prick: Many other Writers don't allow it so large an extent, expressing no more by *Paracentesis* than the Apertures made of the Head, Breast, Belly and *Scrotum*, in order to draw out the Waters therein contained; and lastly, most confine the Signification of the

Restriction
of the Sig-
nification of
the Word
Paracen-
tesis.

The Second Demonstration

Word *Paracentesis* solely to the Practical Operation apply'd to the Bellies of Dropfical Patients. We shall fall in with the last, because there is no one of these Operations which has not its particular Name, and those performed on these four parts to draw out the Waters are accomplished in a different manner: We call that *Paracentesis* only which the Dropfie of the Belly requires, and 'tis that which I am going to demonstrate to you.

Definition
of the
Causes of
of Dropfies.

The Dropfie is looked on as an unnatural Tumour, in which all the Body, or some one of its parts, is swelled to an immeasurable Bulk. 'Tis observed, that this Swelling may be produced by three several sorts of Matter; namely, by *Flegm*, *Wind* and *Water*. That which proceeds from *Flegm* is called *Anasarca* or *Leucophlegmatia*, a pituitous Dropfie; that caused by *Wind* *Tympanites* or a *Tympany*, and that formed by *Water* *Ascites*.

Their vari-
ous Names.

These are the Differences drawn from the Matter of their Composition, and which are specified by our Predecessors which have treated on this Distemper; but they don't appear to me well grounded, because the Word Dropfie being derived from the two Greek ones, *Hydor*, which signifies Water, and *Piein* which imports to Drink, those which have given that Name to this Distemper, seem not to have heard of any other Species of it than that occasioned by Water: So that the *Anasarca* and the *Tympany*, one of which is composed of pituitous Matter, and the other of Wind, are particular Distempers which ought not to be called Dropfies.

Etymology
of all their
Names.

The *Anasarca* is an Universal Accretion and Tumefaction of the whole Body, produced and sustained by a thick crude pituitous Matter, expanded betwixt the Flesh and the Skin, which renders the whole of the latter pale and whitish. *Anasarca* is deriv'd from *Ana*, upon or above, and *Sarx* Flesh, as design'd to express an extravasated Humour spread over the Flesh.

Signs of
an Ana-
sarca,

'Tis also called *Leucophlegmatia*, from *Leucos* white, and *Phlegma* Flegm, because composed of a white pituitous Matter. This Disease is easily distinguish'd, the Face is so turgid that the Patient can scarce open his Eyes: The colour of the Skin is either yellowish or white; and 'tis also so soft, that if the Finger be pushed on any part, the dented Mark remains, and the part thrust in does not recoil to its former Station 'till some time after. Those who believe the Liver to be the principal Organ of Sanguification, have all accused it of being also the Author of this Distemper: They urge, that instead of regularly discharging its destin'd Functions, viz, of forming a commendable and good Blood, proper for the nourishment of all the Parts, it sends them no other than a pituitous Phlegmatic Blood, which

Its Cause
according
to the An-
cients.

Its Cure
solely by
general
Remedies.

does nothing but tumefy and numb the Parts, instead of vivifying and sustaining them. But in our times we do that part Justice, and find other Causes of this Disease, on which I shall not long dwell, any more than on its Cure, which con-

sists only of general Remedies, and without requiring the assistance of a Chirurgical Operation, it ought to be handled by an able Physician.

The *Tympanites* or *Tympany* is a great Inflation of the Belly caused by the Wind, included in its Cavity; the Name of *Tympanites* is bestowed on this Disease, from the Skin of the Belly being as tort as the Head of a Drum. *Hippocrates* calls it a dry Dropsie, from its being compos'd of Wind, and therein differing from the *Anasarca* and *Ascites*, which are called humid Dropsies, as resulting from Flegm and Water. The Signs which discover this Species are, that the Belly is not so heavy as in the *Ascites*, that on the pressure of the Fingers no mark is left, that it appears clear and transparent, and striking it with the Fingers it resounds like a Drum. The Liver, from whence these Diseases were formerly derived, has no share in it; wherefore we are forced to search elsewhere for its Cause, and find it in the Stomach and Intestins, when they cannot justly perform the Dissolution of the Aliments.

I will not here recite all the Remedies which ought to be us'd against Indigestion, and consequently against the Proclivity to the *Tympany*; The Medicinal Art furnishes us with an infinite number, of which I shall mention only one called the *Kings Ros-Solis*, by reason his Majesty has for a considerable time used, and very well approved it: 'Tis thus prepared; in a Pint of Brandy drawn from Spanish Wine, are infus'd for the space of three Months, Anise, Fennel, Skirret, Carrot and Coriander Seeds, each an Ounce; to which is added after the Infusion half a Pound of Sugar-Candy dissolved in Camomile-Water, and boyl'd to the consistence of a Julep, and passed thro' a Strainer: The Dose of this is a Spoonful to be taken every Night when going to Bed. 'Tis an excellent Remedy against the Crudities and Cholicks of the Stomach, for it dissipates all indigested Matter and Wind, and fortifies the Nutritive Organs.

If by the use of Remedies, as well general as particular, the Wind pent in the Cavity of the *Abdomen* does not dissipate, the Chirurgeon may make some Punctures with a Needle, as we have shewn in the *Pneumatophale* and *Gastrorhaphy*; but the Parts here being thicker than those on which the last mentioned Operations were perform'd, and the Operator having the Skin, Muscles and *Peritoneum* to pierce, it sometimes happens that in drawing out the Needle, these Membranes and Flesh covering again the Apertures of one another, hinder the issuing forth of the Wind; in this Case he ought to have recourse to the Trocar or Tap A, which he is to use in the same manner as I shew in the *Ascites*; for this Instrument being excavated thro' its whole length, affords the Vapours an easie Opportunity of fallying out. 'Tis not to be drawn out till the Belly is wholly sunk; there being no danger in void-

Whence
proceeds
the Tym-
pany.

Prepara-
tion of
Ros-Solis.

Its Virtues.

A,
Or Tap.

ing all the Wind at once, as there is in that of the Water which must be drawn out at several times; because the Membranous Fibres and Muscles being accustomed to strong Tension, and sustained by the Waters, cannot at once bear the privation of their Support, without endangering a violent shock to the whole Habit of the Body, and a suspension of the motion of the Heart, and other principal Organs.

Definition,
Etymology
and Division of the
Ascites.

The *Ascites* is a Tumour or extraordinary elevation of the Belly, caused by the enclosure of a great quantity of Water in that Region. The Name bestowed on this Disease is derived from *Askos*, which signifies a Goats Skin, by reason that the Waters which produced it remain together in the Belly in the same manner that Liquors do in a Goat's Skin, into which they are poured, in order for their transportation from one place to another.

Whenever a quantity of Water is diffus'd or amass'd in some place, 'tis called a Dropsie, pursuant to the Etymology which I have already observed. They are said to be of two sorts, viz. general and particular; the general are those in which the Water is diffus'd thro' the whole habit of Body; and the Particular those which are gathered together in some Cavity. Of this last Species there are several sorts which receive different Names from the respective parts fill'd and inundated with this *Lympha*. When it produces a Tumour in the hairy Scalp of the Head, 'tis called *Hydrocephalos*; when it fills the Breast, it has the name of *Pleurocele*; if inclos'd in the Belly 'tis named *Ascites*, and when amass'd in the *Scrotum*, 'tis term'd *Hydrocele*. But tho' all these Infirmities are real Dropsies, we yet commonly call no others Dropsical, besides those Patients whose Bellies we find full of Water, and 'tis in their Case alone that the *Paracentesis* is proper: 'Tis this Operation which I am going to demonstrate, after having instructed you in the Nature of these Distempers as far as 'tis requisite for a Chirurgeon, to enable him to know whether he ought to undertake and hope for their Cure.

To what
sort of
Dropsie the
Paracen-
tesis is a-
dapted.
This Di-
stemper as-
cribed to
the Liver
or Melt.

All Authors have labour'd in search of the Cause of Dropsies; some at first look'd for it in the Liver, and others in the Milt. The number of those who accuse the Liver is the largest, by reason that being prepossess'd that it formed the Blood, they ascrib'd to that Organ all the supervening Irregularities of that Humour, and particularly its Conversion into Serosities, which disgorging from its Mass, and overflowing some part, cause all the Disorders which attend the Disease of which we are speaking. What confirmed them extremely in this Sentiment was, that after having opened Dropsical Corps, they found the Liver hard, *Schirrhus* and corrupted, both in Substance and Colour; they wanted no more to persuade them that the *Parenchyma* was the sole cause of the Dropsie.

Those

Those who assert, that the Milt contributes to the forming of the Blood, and who for that reason call it the Liver's Vicar, believe themselves in the right in charging it with the Irregularities which happen in Sanguification. The Pain which the Patient feels in the Region of the Spleen, the hardness and ponderosity which it brings thither, the Obstructions which it settles there, and lastly, the Estate in which, as well as the Liver, 'tis found after the Death of the Hydropic Patient, appear'd to them to be sufficient Reasons to maintain the Assertion, that it might be a Primitive Cause of the Dropsie, as well as the Liver; and 'twas for this reason that they prescribed the performance of the *Paracentesis* on the Left side, when they acknowledged the Dropsie to be caused by the Liver; and on the Right when they had Signs of its proceeding from the Milt, chusing one side rather than the other, for the Reasons which I shall tell you in a moment.

I know that in opening an Hydropic Corps, we find the Liver and Milt so hardened, that we cannot without difficulty cut them; but the condition in which those Parts then are, is owing to their long having floated in this Serosity which filled the Belly, and which like the Brine in which we lay Meats, in process of time hardens it: So that the *Scirrhi* of the Liver and Milt ought no longer to be taken for the Cause of the Dropsie, but an Accident attending them.

Those Authors who have refined on the Causes of the Dropsie, tell us that they are of two sorts, the one Primitive Causes and resulting from it self, and the other such as only *Sympathise* with the first, which are those which they make to depend on the Liver and Milt, and which they affirm consist solely in the deficiency and indisposition of one or other of those two parts; whilst those which produce this Distemper by Sympathy, reside in different places from the place where the Distemper appears, as in the Lungs, Stomach, Intestins, Mesentery, the Gall, Bladder, the Reins, or in the Matrix.

Without detaining you any longer on the Opinion of the Ancients concerning the Causes of the Dropsie, I must tell you that I own but one just one, which is the obstacle which happens in the separation of the Serosity of the Blood by the Reins and Bladder; for no Man whose Urine passes well ever becomes Dropfical, and you may always observe, that those who become so don't void so much Urine as they before used to do: 'Tis then the total, or in part, suppression of Urine which causes this Distemper. 'Tis then now fit we should examine what those Obstacles are which impede the Passage of the Urine by its ordinary course; I know but two, which are either the Rupture of some Lymphatic Vessel, or the fault of the Urinary Salts.

You know there are an infinity of small Vessels full of a Liquor as clear as Water, call'd the *Lymphatic Veins*, which wind

Advice of the Ancients pursuant to this Theory.

The Indisposition of the Liver and Spleen the effect not cause of Dropsies.

Distinction of its Primitive and Sympathetic Causes.

Its true Cause.

Why the
Ancients
were igno-
rant of this
Cause.

Whence
proceeds
the Defici-
ency of U-
rinous
Salts.

Proofs of
the Causes
assigned.

wind about the Membrane of the Liver, and which are dispers'd and spread thro' the whole *Epiploon* and *Mesentery*; that the tunic of these Vessels is very thin, that they incessantly hurry on the *Lympha*, in order to throw it into the Mass of Blood; and if by any Cause whatsoever one of the Vessels happens to break, which may easily happen by reason of the fineness of the Membranes, this Water distilling by drops into the Cavity of the Belly, in process of time fills it: Hence 'tis easie to conceive, that this Liquor which serves to liquefie the Blood, and to charge it self with its sharpest part, finding a way to escape by slow degrees thro' the Aperture of one of its Vessels, either torn or broken, is not carried in such great quantity to the Reins, nor doth it any longer separate so much Urine as before this Serosity had taken another Course; so that it ought not to be said that the Dropsie is the Cause of the small Separation of the Urine, but that those who void but very little Urine, become Dropfical: And be not surprized if our Ancestors never mentioned this Cause of the Dropsie, since these Lymphatic Veins were unknown to them, not being discovered before the last Age.

The Deficiency of Urinous Salts, which I have assigned to be another Cause of the Dropsie, is not less probable. You well know that the Reins are of a very compact Substance, that they have several small mammillary Bodies pierc'd with an infinite number of imperceptible Holes, by which the Urine separates it self from the Blood, and continually distills into the *Infundibulum Renum*, or *Basin* of the Reins, to be conveyed from thence by the Ureters into the Bladder. If this Serosity carried to the Reins by the emulgent Arteries, is either too thick, or too sweet or fresh, 'tis not difficult to comprehend that 'twill not without Difficulty pass through the Pores of these mammillary Bodies, whose Substance is more solid than that of the other Glands: It cannot then be sufficiently filtrated, without the two Qualifications of being subtile and salt; the one, that it may easily pass through these extream small Pores; and the other, that being charged with the sharp and picquant Points which the Salts carry with them, it may open a Passage which would be denied to an insipid Liquor, whose Particles were too pliant.

What Observations soever we make of this Distemper, we shall always find that it proceeds from one of these Causes. If 'tis succeeded by an Indigestion, as it frequently happens, 'tis for want of an Acid in the Stomach and Intestins strong enough perfectly to dissolve the Nutriment, whence the Chyle yet crude and half digested being carried into the Blood, hinders the Serosity full of gross Particles of Chyle from passing through such small Pores, as the Mammillary Bodies the Reins; wherefore flowing back into the Blood, whose Mass it too much augments, it hunts after some other Place by which to escape;

escape; it diffuses it self in the Spaces which it meets; and if it continues diffused through the whole habit of Body, it produces a general Dropsie; or if it gathers into some Cavity, it causes a particular one.

When the yet imperfect Chyle is carried to the Heart, 'tis Cause and from the Acids in the Mouth, Stomach and Intestins, being Consequence of not duly qualified; and if they are not arm'd with sharp Points, vigorous enough to bruise it intirely, and render it as fluid as an imperfect Chyle, it ought to be, the same too feeble Acids will not be found endued with so much Strength as is requisite to make its Passage in the Reins through such Pores as cannot be passed thro' without Violence; for if they are wide enough to suffer the Percolation of this ferous Humour without any Difficulty, the Blood and other Liquors mingled with it would take this Course, which we see happen when by an Excess of Acrimony the Urine, passing with too much Precipitation, comes out yet bloody.

The Dropsie is frequently proceeded by a great Hemorrhage, An Hæ- either through the Nose, Matrix, or by the Hemorrhoides, morrhage which will not give us much Trouble to explain. After a frequently Loss of Blood, the Chylous Matter and the Drink, being conducted into the Vessels, they fill; and in supplying the deficient quantity of Blood, they continue their circular Motion; Cause of a wherefore, immediately after the Loss of Blood, the Chi-Dropsie. surgeon should order Broth to be frequently given to his Patient, that this liquid Aliment may expeditiously supply the Place of the lost Blood: But these Liquors not having either the same Consistence or Penetration as the Blood, they may glide into a Cavity of the Body by some unknown way; and then having began this Road, they continue the Inundations; if by the Assistance of Aperitive Remedies we don't endeavour to force them to return to their native Passage through the Reins, which they ought not to quit.

If we reflect on all the Medicaments used to provoke Urine, Quality of we shall find that they are Salts, which intermixing with the the Medi- Serosity sharpen it, and which, stimulating the Places thro' caments which they are to go, make all the Passages free, either by dilating them, or irritating the musculous Fibres, which must proper. force the Liquor to enter these Conduits. This Practice proves that 'tis owned by Practitioners, that the Urine being too flegmatical, wants to be animated, in order to return into its ordinary Channels, and not discharge it self into some other Part.

Daily Experience agrees with what I advance: Burgundy Experience Wine being thicker and less poinant than that of Champagne, confirms passes also slower than this last, which being more subtile, and what has participating more of a tartarous Salt, cuts and glides with such been said. Precipitation, that it excites Urine soon after 'tis drank. I could yet offer you several Reasons to prove my Opinion; but that would

would carry us too far, and these are sufficiently convincing, that the two principal Causes of the Dropsie are either the Rupture of some Lymphatic Vessel, or the Deficiency of urinous Salts.

Signs of
this Dis-
ease.

Scarce any Disease is attended with more certain Signs than this. We know that a Dropsie is beginning when voiding less Urine than usual, the Belly swells by slow Degrees by the gathering of the Serosities which distill into it: When the Patient is laid on his Back, his Belly is equally extended; but if he lyes on one side, the Water then making to the under side, there forms a great Purse by its own Weight and Bulk, and upon any small Motion is heard to float in the Cavity, as in a Vessel half full: The *Scrotum* afterwards becomes tumefied by part of the serous Liquor which distills into it from the Belly; the Yard and Lips of the Matrix are swelled with the same; the Thighs, the Legs and Feet, by their low Situation, determine the Humours to run towards them, and those Parts encreased in Bulk in an extraordinary manner by the Affluence of these Waters. On the contrary, the Head, Breast and Arms daily grow leaner. It must be observed here, that the Tumefaction of the inferior extream Parts always proceeds an *Anasarca*, and succeeds an *Ascites*, this ending with what the other began.

Its princi-
pal Symp-
toms.

This Disease is accompanied by several Symptoms, the principal of which are a slow Pulse, occasioned by the crude and indigested Chyle, which rendring the Blood more ponderous and gross, retards its Motion: The Ponderosity of the whole Body, which proceeds from the Spirits being extinguished in the Waters; the Difficulty of Respiration, occasioned by the Tension of the Belly, which repulsing the Diaphragma upwards, and diminishing the Diameter of the Breast, does not leave the Lungs Liberty to extend themselves sufficiently: The excessive Thirst is occasioned, by reason that the Humidity which distills from the Glandules of the *Oesophagus* and the Stomach, in order to sustain the Moisture, and cool those Organs, being diverted elsewhere, those Parts growing hot and dry, excite a continual violent Thirst. The slow Fever is an Effect of the Crudity of the Chyle, and the other fermenting Acids there confused, which, by their Fermentations, render the Motion of the Heart irregular; or being furnished with only a small quantity of Spirits, can do nothing but enfeeble the Action of that Muscle. I don't speak of the Difficulty of Urine, which is inseparable from all Dropsies, because I regard it as their Cause, and not as a supervening Accident.

Cause of
the Paleness
of Hydro-
pics.

'Tis farther observable, That the paleness of the Face, and wanness of the whole Body, which continually attends these sort of Patients, proceeds from two Causes, viz. from the too great quantity of *Lympha* in the Vessels, which macerates and washes the Blood; or from the Blood not being sufficiently fermented

fermented to acquire the degree of its ordinary deep redness. The first depends on the Indisposition of the Reins, which hinders their separation of the Serosity of the Blood; and the second, on the Insinuation of an exorbitant quantity of indigested Aliments into the Mass of Blood, as it happens after a great *Hæmorrhage*. The Patients continue long pale, because the Chyle must pass through the Furnaces of the Heart, where, by the Heat and Compression to which 'tis subjected, it must be several times elaborated, attenuated and fermented, in order to become Blood of a redness sufficiently deep to imprint on the Skin the Vermilion Tincture, which denotes a perfect State of Health.

With regard to the Prognostics of Dropsies, it may be answered that they are all mortal, founded on the Principle which *Prognostics of this Disease.* lays down, that we ought to allow as a general Rule what most frequently happens; and more dying than escape, we ought rather to hint, that the Patient may dye, than rashly assure or promise to cure him. Nevertheless, all of them are not intirely fatal, since some have been cur'd: Those which are mortal, are principally those where the Liver is grown hard and *schirrous*, those which succeed an acute Distemper, those which are inveterate, and those which are attended with a Flux of the Belly; those which fall on a weak or old Subject, or one which cannot stand upright or sit; and lastly, those accompanied with a violent Cough. The curable are those which don't appear attended with the mention'd ill Circumstances, attacking a robust young Person endued with sufficient Vigour and Courage for the use of Remedies, and suffering the Operations necessary to the Cure of this Distemper.

I don't know why some Authors make a Difference betwixt the Nascent and Mature Dropsie; for when a Mass of Water is discerned to be gathered in any Cavity, this Disease is then *It requires immediate Remedy.* but too ripe, and when no part of the extravas'd Serosities appear there is no Dropsie: But on the least Suspicion in any Part, Remedies ought not to be neglected; for this Disease incessantly augmenting and increasing, almost always carries its Patient to the Grave, when its Progress is not stop'd in time by closing the too much dilated Pores, or relax'd Fibres, and a fresh intermixing the Serosities with the Mass of other Humours by Medicaments; for the Chirurgeon's Assistance, by means of the *Paracentesis*, not reaching the Cause, will only remedy the Accident.

We are then at present to endeavour the Cure of this Distemper; in order to succeed in which, the Accomplishment of two things is necessary; first, to evacuate the Waters contain'd in the Belly; and secondly, to prevent the gathering of new ones.

The Waters are forced out two ways, either insensibly or sensibly, that is, either by *Pharmacy* or *Chirurgery*. *Two ways of evacuating the Water.*

Two sorts of Medicines. The Medicaments furnished by *Pharmacy* are of two sorts : They are either such as are *externally*, or such as are *internally* applied.

Properties of the External. The former must be strong *Deficcatives*. *Fabricius* relates to have seen very good Effects result from a large Sponge moistened in Lime-water, and applied to the Belly. *Galen* advises the Patient to plunge himself stark naked into a Sack of Corn, because, says he, the Peasants, to swell their Corn, and render it more weighty, throw into it Bottles of Water which slowly drain out, from whence the Consequence seem'd to him just, that if the Corn had the Virtue imperceptibly to attract the Water through the Bottles, it might draw out that which was contain'd in the Belly: He further adds, that in *Egypt* dropfical Patients were cured by exposing their Bellies to the Sun, or laying them in Sand before heated by the Beams of that Planet.

Virtues of the Internal Medicines. The Remedies internally taken are so very numerous, that 'twould be impossible for me to recite them all: They are such as, stimulating the Urine, force it to the Reins, and by their incisive and pointant Particles, tend to open a Way for their Passage: These Medicaments are called *Aperitives*, or *Diuretics*; the strongest of which are the Salts of *Millipedes* or *Hoglice*, *Rue*, *Mugwort* or *Artemisia*, *Tartar*, *Juniper*, and the *Sal Polychrestum*. The *Prior of Cabrières*, who gave the King his Secrets, has inserted amongst them a Remedy against the Dropsie, consisting of *Steel File-dust* and *Spirit of Vitriol*, of which he gave six Grains every Day. He farther directs the Decoction of *wild Smallage* in *Red Wine*, adding a small quantity of *Senna* and *Chrystal Mineral*, of which he ordered a small Glass to be drank every Morning, prescribing to his Patients the Alternative Use of the Powder and this Wine; and above all, recommending to them the dropping of some Drops of *Spirit of Salt* into their Decoction. With these Remedies he pretended to cure all sorts of Dropsies; but tho' they should be allowed to be the best that we know, we are not sure of their very frequent Success. If then, after the Use of them, the Disease increase, Recourse must be had to Chirurgery, which proposes to us two Methods, one of opening the Belly, and the other of making Scarifications only in some other Parts as the *Scrotum*, the Thighs, Legs, or Feet. These Scarifications are made on the Cods, and sometimes on the Yard or Lips of the Matrix, when those Parts are so swelled that it seems impossible to force the Water through any other Passages than small Wounds through which it distills in Drops, decreasing apparently the swelling of the Part, in proportion to their Evacuation. We are also obliged to practise them on the Thighs, Legs and Feet near the Ankles, or on the Instep, in order to discharge, or force those Parts to disgorge what appears to us transparent, like Bottles full of Water. Nature is

not

not always so patient, as to wait this Chirurgical Assistance; for these Parts frequently of themselves tumefie by the abundance of Serosities with which they are filled, which by breaking they void; when this happens the Patient seems relieved, but it really does but prolong his Misery.

We meet with some who void all the Waters of the *Abdo-* *The Con-*
men through these Apertures: But the Source not being dry- *venien-*
ed up, they cannot be closed. The Water which incessantly *and Incon-*
runs through them, renders the Flesh of the edges of these *venien-*
Ulcers of a pale Cadaverous Colour, and sometimes for want of Superfi-
of natural Heat, which is lost or stifled by the continual De- *cial Aper-*
fcent of these Waters, they gangrene. *tures.*

There are no particular Places assigned where Scarifications ought to be made, but the most proper are the most transparent; and where the Tumour threatens to break, if a Passage be not immediately provided for it. *Fabricius* pretends to be nearer the Mark, when he tells us, That he cauterises the Leg to open a Passage for these Waters, and by that Means facilitate their Evacuation.

Tho' Scarification seem less cruel than piercing the Belly, *Punction*
for any part I yet prefer Punction on several Considerations; *safer.*
the first of which is, that in order to reap the Advantage which *Reasons to*
we may promise our selves from this Operation, it ought not *prefer Punc-*
to be deferred 'till the lower Extremities are sufficiently tume- *tion to Scar-*
fied to admit of Scarification; the second is, that by Punction *rification.*
more Water is voided in a quarter of an Hour, than in eight
Days by Scarification, and consequently the Patient is more
expeditiously relieved: The third is, that the Water irrigating
the Muscles and Membranes of all these Organs, Scarification
so relaxes the Fibres, as to leave a Weakness, which is seldom
cured: And the fourth is, that all Dropsies end with the *Spha-*
celus, which never fails, soon or late, to happen to the Place
where any of these Overtures are made by Scarification.

Without dwelling on the Arguments of those who disap-
prove the *Paracentesis*, I should always advise to proceed to
the Performance of it, rather than abandon the Patient to the
utmost Extremity, and see him dye without help. In short,
the Adversaries of this Operation represent to us a great many
Difficulties which they meet with in the Execution of it; but
teach us nothing better. I shall then prefer my own Expe-
rience on several Patients which I have seen well cured by it,
to their Prejudices; and believe *Ambrose Para*, that a Porter
at *Orleans* was cured of a Dropsie by the Incision with a
Knife, which one of his Comerades made in fighting with him.

The Punction prescribed in order to draw out the Water in *Place*
the *Abdomen*, may be made in two different Parts of that *where Punc-*
Region, *viz.* on, or beside the Navel. *tion to be*
made.

That

That practised on the Navel does not at all differ from that of the *Hydromphale*, which I have already demonstrated to you; the same Instruments are made use of, and the same manner of Operation followed; for these two Diseases differ only in their Degrees of more or less; the Matter to be evacuated is still Water; and it sometimes happens, that when the Operator aims no farther, than to give Passage to a small quantity of *Lympha* contained in the Tumour of the Navel, he finds to issue out at it the whole quantity which filled the Belly, by reason that the *Hydromphale* is frequently no more than an Effect of the *Ascites*.

There are two Methods of opening the Belly beside the Navel, either according to the Ancients with a Lancet, or according to the Moderns with a Trocar or Tap. Both of them are proper, nevertheless one of them is better than the other, which I leave to your Decision after you have seen them.

False Arguments on the choice of Place.

We find in most Authors several useless Disputes concerning the Place of the Belly where the Aperture is to be made: They will have us open the left Side, when the Dropsie proceeds from the Liver; the right, when occasioned by the Milt; and the Punction to be made in the middle, when the Disease is found to be owing to the Intestins. To support their Opinion, they bring three or four very trivial Reasons: They say, that one side being already enfeebled by the Disease, ought not to be weakened a-fresh by Incision, which, besides being made on the same side, would oblige the Patient to lye on that opposite to it, and then the *Schirrhus* Organ, that is the Liver, the Milt or the Intestin, remaining low and pendant, would occasion Pain, by its Pressure on the sound Parts; that 'twould be worse if the Patient should lye on the Wound, by reason that the Section already made has forced the wounded side to suffer enough, without fatiguing it any farther; and lastly, that the Patient ought nevertheless to be laid on the side of the Entrail effected, in order to strengthen it by the heat of the Bed.

Precaution regarding the Place of Punction.

But 'tis easily answered, that this Wound is too small to occasion any considerable Augmentation of the Indisposition, rather in one Posture than another; or that we can scarce discover whether the Liver or Milt be most affected in a dropical Patient: We are not then at all to regard the preceding Reasons, but make the Punction indifferently on the right or left Side, the Chirurgion chusing that which he finds most at hand. Yet I would not advise him to pierce the Belly in the middle, four Fingers below the Navel, on account of the *Aponuroses* of the Muscles of the *Abdomen*, which the Operator would then be obliged to cut; which, besides the Pain they would put the Patient to in the Operation, would be very difficult to consolidate: We may then perform the Punction

one of the sides, or rather one time on the one, and another on the other; for we must not draw out the Water all at once, and being frequently obliged to evacuate it at five or six times, the two sides should then be alternatively open'd.

Our present Business is to instruct you in the manner of Performance; in order to proceed in which regularly, as in an important Enterprize, we must examine what is to be done before, during, and after the Operation.

Before the Operation, three things are necessary; first of all, *Preparation* The Preparation of the *Apparatus*; secondly, The Posture of the Patient; and thirdly, To mark out the Place where the Punction is to be performed. *tives for this Operation.*

First of all, in this Operation, as well as all other, the Chirurgeon must dispose his *Apparatus*, which consists of proper *Instruments, Plaisters, Bolsters and Bandages*, such as you see rang'd on this Plate. The Instruments are three, a *Lancet*, B, a *Probe*, C, and a *Tube or Pipe*, D; the Lancet ought to be like those used in *Phlebotomy*, that is small, that it may not make the Aperture too large: Its Blade is wrap'd about with a narrow Linnen Band, no more being left uncover'd than what is necessary to penetrate as far as the Water. The Probe is a small long Silver Style, like those used in probing of Wounds: It must be slender enough to pass through the Cavity of the Pipe, which should be of Lead or Silver, qualified as follows, *viz.* first, well polish'd, that it may not hurt; secondly, to have a Rest or Stay at its Head, lest it advance too far in the Cavity; thirdly, to be bor'd through its whole length, and pierc'd on its sides; fourthly, not to be so long as to touch the internal Parts; fifthly, to be provided with two small Holes at its Head, through which to run the Ribans, E, F, which keep it from coming out; sixthly, to be proportion'd to the Instrument with which the Punction is made; for if it were bigger it could not enter; and if less, the Water would escape betwixt it and the edge of the Wound. *Qualification of the Instruments.*

The *Apparatus* being ready, the Patient must be placed: Some Chirurgeons fix him on his Seat in his Bed, and others oblige him to rise, in order to seat him in an easie Elbow-Chair: This last Situation is the most advantageous; for besides that the Water will run, without Interruption, into a Vessel plac'd on the Ground betwixt the Patient's Legs; we don't run the risque of spilling the Water in the Bed, which ought to be ready disposed to receive the Patient immediately after the Operation, he then wanting Repose. *Of the Situation of the Subject.*

Next, the Chirurgeon takes up the Patient's Shift to uncover his Belly, and with a little Ink marks the Place which he intends to pierce. Authors tell us, that it ought to be four Fingers below, and on the side of the Navel; in order to avoid the *Aponeuroses*, and make the Punction in the Body of the Muscles of the *Abdomen*: But if, when the Belly is tumefied and full of Water, the Operator should leave but four *Place where the Belly is to be pierc'd.*

Fingers betwixt the Navel and the place to which he applies the point of his Lancet, the Puncture would undoubtedly fall amongst the tendinous Expansions; for the greater security 'tis then necessary to perform the Punction seven or eight Fingers breadth on one side, or below the Navel, and the Chirurgeon will find that after the Belly is emptied and returned to its natural State, it will not be above four Fingers breadth from the middle of the *Abdomen*, and this is supposed to be the meaning of the Chirurgical Writers. Authors again disagree on the Head, whether the Incision is to be made lengthways, obliquely, or a-cross; those who propose it longways tell us, that we thereby avoid cutting of the Fibres of the streight Muscle; those who follow the oblique way pretend to be secured by it from injuring the oblique Muscles; and those who recommend the cross-way, prefer the preservation of the transverse Muscle before the safety of the rest. The first are mistaken, for in extending the Punction of the Navel, 'tis not done on the streight or erected Muscles; the second don't make good their Pretension, for carrying the Lancet obliquely, they always cut the Fibres of one of the two oblique Muscles, because they cross them; but the last method is to be practis'd, that is the cross-way, since by this manner the Incision separates only the Fibres of the transverse Muscle without cutting them, and when the Chirurgeon comes to take out the Pipe, they approach one another, and re-join the Lips of the Wound of the *Peritonæum* which is adherent to them, which advances the cicatrising.

*What
course the
Incision
must take.*

*Circum-
stances to
be observed
in the mo-
ment of the
Operation.*

The Circumstances to be observ'd during the Operation are these: A Servant ought to be placed behind the Patient, that resting with his Hands on the two lateral parts of the Belly, he may push outwards the part which is to be prick'd, and prevent the point of the Lancet touching any of the contained Parts. After this the Chirurgeon takes in his right Hand that Instrument which he plunges a-cross, 'till it has pierced the oblique Muscles: When he makes a little pause, then with the other hand drawing the Skin a little downwards, he finishes with thrusting the Lancet as far as into the Cavity; and when, by the Water issuing out on both sides of the Blade, he discerns that he is entred, he takes the Probe in his right Hand, and introduces it into the Abdomen by the assistance of this Blade, which serves him as a Guide; then withdrawing his Lancet, and having given it to some Boy, he receives in the same Hand the Tube or Pipe, in the Cavity of which he thrusts the end of the Probe, and after having chang'd his Hand, he pushes with a little violence 'till 'tis entred the Cavity: When drawing out the Probe he sees the Water run out at the exterior Aperture of the Pipe, in the same manner as Wine does out of a Hoghead just pierc'd, and tapp'd with a Cane.

'Tis not in vain that I have told you that the Belly must be pierc'd at twice, and that the Skin must be a little lower'd, *A fault to be avoided.* for by this means the Wound not being entirely streight, its Aperture will be stopped by the Skin which was drawn down, and the re-union be very much expedited. When the Tube is taken out, care must be taken not to fall into the fault committed by a Chirurgeon at *Monfort*, who performing this Operation on the Wife of one of the King's Officers, and endeavouring to introduce the Pipe, negligently quitted the Probe, which sliding into the Cavity of the Belly, could not be drawn out before the Death of the Patient; and tho' this Accident was not the sole Cause, yet the People, who don't always take things right which are not obvious to the Senses, imputed it to it: The Chirurgeon must not then quit the Probe in changing one Hand, 'till he is very sure he has fast hold of it with the other.

The quantity of Water to be drawn out this first time is not prescrib'd. The Chirurgeon regulates himself according to the strength of the Patient; he may evacuate two, three or four Pints; and, if we should hearken to the Patients we should draw off more, because they find themselves eased in proportion to the quantity which runs out, and respire more freely. But in this follow the Advice of good Practitioners, who forbid us the emptying of the Belly all at once; and really 'tis better to do it in three or four times, than to precipitate all at once from an extreme Repletion to an extreme Inanition, because violent and immeasurable Evacuations are Mortal; and, in general, every Excess is an Enemy to Nature, which proceeds slowly and by degrees. During the running out of the Water, the Operator may give the Patient a small quantity of Wine, or some other Liquor, to prevent his Fainting; and when a sufficient quantity is evacuated, he stops the hole of the Pipe with a small stopple of Lint, F: Two or three Days after the Chirurgeon returns, and barely taking out the Stopple, lets out as much *Lympha* as he thinks proper, and continues to draw out the Water at several times, 'till the Belly be intirely drained of these exotic Serosities.

But immediately after the first Evacuation, the Cavity of the Pipe being stopp'd, the Chirurgeon must apply a square Plaister G, charg'd with an Astringent Medicament, and cover it with a Bolster H, which extends a little beyond each of the Edges; that done, a second Plaister, I, of the same shape is clapt on, and another Bolster K, above it; after which, the whole is covered with a yet larger and third Plaister L, and lastly, a great Bolster M, which strongly presses the place of the Aperture. These Plaisters and Bolsters are sustain'd by the Napkin N, of which is made a circular Bandage, sustained by the Scapular O: This done, the Patient is next again put to Bed, taking care that he be not suffered to lye on that side in

What to be done after the Operation.

which the Punction was made, for fear lest the Water should force out the Stopple, and unreasonably run out, or else evacuate in such large quantities, as to put the Patient in danger of his Life.

Thus the *Paracentesis* is performed with the Lancet, according to the Ancients: Let's now then see how the Moderns execute their Operation with a *Trocar*.

Method of
the Mo-
derns.

These latter don't want so many Preparatives as the Ancients, in order to perform the *Paracentesis*: They want only two things; an Instrument, P, and a Plaister, Q. The Instrument is called a *Trocar* or *Trois-carts*, that is, three quarters, by reason of its Point being triangular; 'tis shaped like a Punccheon, and its length is about two or three Fingers breadth, being excavated throughout its whole length, like a small Pipe, except towards the Point, where are four small holes laterally placed, by which the Water enters into the Cavity, and runs out of the Body: It is provided with a head like a Pipe, by pushing which with the Thumb one is able to thrust it into the Body at one Effort; then, by taking the Thumb from the Aperture, the Water runs out as from a Cock. Of these *Trocars*, some are provided with Handles, and their Needle is placed in the Cavity of a small Tube. To use either the one, or the other, the Patient is set in an Elbow-Chair, and the Chirurgeon orders an Apprentice to hold the sides of the Belly, whilst he draws the Skin a little upwards, or else downwards, at the Place which he designs to pierce: Then, all at once, he thrusts in the Instrument, as one does a Cock into a Cask of Wine; he sets at the Patient's Feet a Bason, which receives the Water that comes out, which he lets run at Discretion. When the Chirurgeon finds he has drawn enough, he need only pull out the *Trocar*, and the running of the Water will at that Moment cease, and not a single drop more will come out, because the Skin, Muscles, and the *Peritonæum* returning, stop the Apertures of one another. To this Puncture is applied only a Plaister of *Ceruse*, of the bigness of about a piece of fifteen Sols. When the Chirurgeon again desires to draw out the Water, he makes new Punctures alternatively on the two sides, as many times as he judges necessary, that one side may not be worse treated than the other, taking care that the repeated Punctures on the same side be mutually distant from each other about two Fingers breadth.

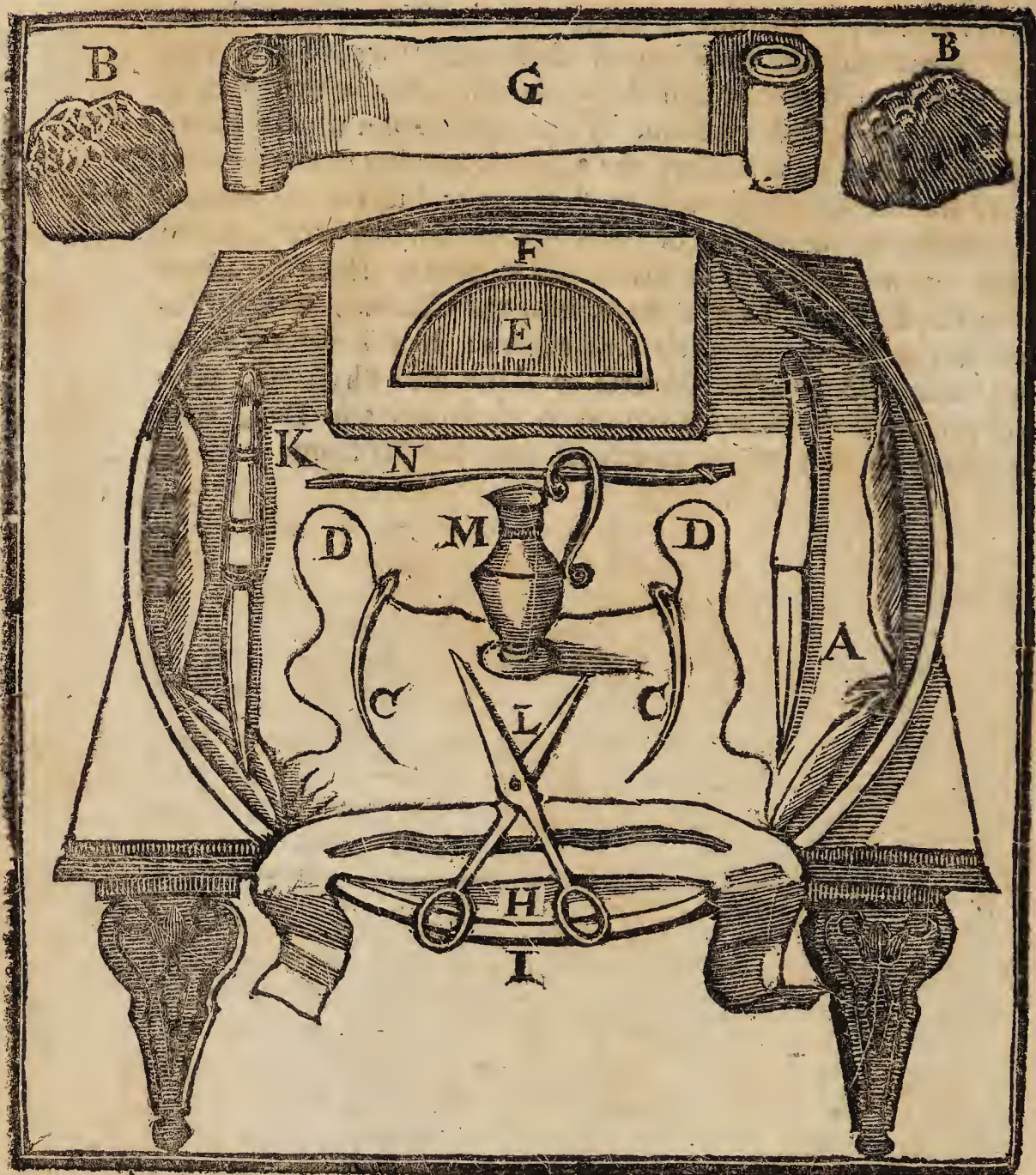
Reasons of
the Prefer-
ence of this
second way
by the Tro-
car.

This second Method very much surpasses the other, and is preferable on all Accounts; it does not require such a large *Apparatus*, the Punction is less, 'tis sooner performed, the Operator is secure that the Water will not escape, and it requires neither Bolster nor Bandage, which frequently are only troublesome. I advise you then to keep to this last Method, of which you will certainly find such good Effects, that you, as well as I, will wholly abandon the old way, in order to

to make use of no other than the *Trocar*, which has saved the Lives of several; amongst others, of *Madam de Chateauneuf's* Groom, from whom were drawn above an hundred and twenty Pints of Water, at twenty five Punctions, and the Patient is yet alive.

I lately told you, that to cure the Dropſie, two Particulars were neceſſary; the one to draw out the Water, and the other to prevent the amaſſing of freſh quantities of it: The firſt Intention is accompliſh'd by the Methods which I have ſhew'd you; and the ſecond, by the Application of the Internal Remedies; ſo that after the Chirurgeon has performed his Part, the Patient ought not to ſtop there; but on the contrary, ſubmit to the taking of ſuch Aperitive and Direcretic Remedies as are ſufficient to divert the Courſe of theſe Serofities from the Belly, and force them into the Channel, which Nature has appointed for their Evacuation: In this wiſe Reſolution, they ſhould have recourſe to ſome able Phyſician, who will preſcribe them, with regard to Pharmacy and Diet, ſuch Remedies as they ought to expect their Health from.

FIGURE XII. Of the CÆSAREAN SECTION.



*Etymology
of the Word
Cæſarean,*

THE *Cæſarean* Operation is an Inciſion on the Belly of a pregnant Woman, in order to draw out the Child, contain'd in the Matrix, when it cannot otherwiſe come out. 'Tis call'd *Cæſarean*, by reaſon that *Scipio Africanus* being taken out of his Mother's Belly by Inciſion, *Cæſar*, was firnam'd *Cæſar* on that account; and the Name deſcending on his Poſterity, and applied to thoſe who came into the World that way, the Operation or Section which produced ſo many *Cæſars*, was called *Cæſarean*; But *Pliny*, who relates the Hiſto-

ry,

ry, does not specify, whether 'twas during the Life, or after the Death of the Mother, that this Aperture was made, a Circumstance which he ought not to have forgotten. 'Tis yet probable, that the Mother was dead; for we very rarely find Persons cruel enough to perform such an Operation on a living Woman.

This Operation was practised on the Body of *Jane Seymour*, On what one of King *Henry* the VIIIth's Queens; who being in her occasion Labour-Pains, the King being told 'twas impossible to save 'twas practised both Mother and Child, and asked which he would have saved; answered, the Child, for I may have another Wife.

Thevenin, who describes this Operation, says, 'tis performed on three different Occasions, viz. when the Mother and Child are both living; when the Mother is living, and the Child dead; or lastly, when the Mother is dead, and the Child living. He is also courageous enough to advise us to put it in Practice; but does not, to encourage us, hint that he had ever performed it, or seen it performed on any Person.

Some modern Authors espouse his Sentiment, representing this Operation so easie by the Description which they make of it, that if we believe them, we are to put it in Practice on the least Difficulties we meet with in the delivery of Women; but if they had been Eye-witnesses of such a Performance, they would soon change their Opinion, and allow that a Chirurgeon ought to be void of Humanity, in order to undertake it.

Its sole Idea will force the most intrepid to tremble. Judge Cruelty of also what Resolution one ought to have to qualify one to the Operation. open the Belly of a living Woman, making in it an Incision of above half a foot long; then groping in the Cavity of the *Abdomen*, cut a like Wound in the Body of the Matrix; then pierce the Membranes, and draw out a Child through all these Apertures. This Operation terrifies and affrights the Chirurgeon, even when performed after the Death of the Woman. What Horrour then should it not excite, when accompanied with the Cries of a Mother, which we force to suffer with unparallel'd Cruelty, and the Effusion of a prodigious quantity of Blood, which flowing out by the great Wounds, may kill her in an Instant, while in the Hands of the Operator?

If it be true, that a Scratch of a Nail on the Matrix occasions Inflammations, and frequently Death, and that an Ulcer there, though never so small, is almost always incurable; what fatal Consequences ought we not to expect from an Incision of six or seven inches long? Those who approve this Operation advance two Particulars, which don't agree with Experience; the one, that the Woman feels very little of the Pain, when her Matrix is cutting; and the other, that the *Hæmorrhage*, on this Occasion, is not so large as is imagined.

Reasons for its Condemnation.

The Sensibility of the Matrix destroys the first Assertion, since by the Acknowledgment of all Women, the Pains which they feel in that Part are insupportable, and a slight Ulcer there is infinitely more painful than in any other Part of the Body: The great number of Vessels which irrigate the *Uterus*, and their largeness in the time when it contains the Infant, condemn the second Reason alledged: For if they have ever open'd a dead Woman in this Condition, they must have been surpris'd to see so many Veins and Arteries; and these Vessels, which when a Woman is not with Child are no bigger than the small String of a Lute, towards the end of her time acquire the Diameter of a large writing Quill: What way then can there be to cut so many Channels fill'd with Blood, and at the same time hinder the Effusion of that Humour in a terrible abundance? What they answer to this Article is by no Means allowable; they say, that the Child is no sooner drawn out of the Matrix, than it begins to resume its ordinary Dimensions, and that in contracting it self, it stops the Orifices of the Vessels which the Incision opened: But that Organ contracts but slowly, and requires at least two or three Days to return to its natural Estate; and in the space of half an hour at most, a Woman may lose all her Blood to Death.

Histories
which seem
to render
it practica-
ble.

They add, that it has been seen that Children have burst the Purse which contain'd them, and fallen into the Cavity of the lower Venter, where they have remain'd several Years, and their Mothers yet lived. 'Tis true, I have read some Stories of that Nature. Mr. Bayle has given us a very long one which happened at *Thoulouse*; and he relates, that the Child remain'd twenty five Years, or thereabouts, in its Mother's Belly: Another Story of like Nature has been related to me to have happened at *Sont-a-Mousson*. The Court passing that way in the Year 1673, Brother *Barbilart*, Apothecary to the Jesuits of that City, shewed the Queen (who visited their House) a Child which he kept in Brandy, which, he said, was found in the Body of the Mother after her Death.

I desired his Opinion on an Accident so extraordinary, and he answered me in the Presence of her Majesty, that he believed it to be a Twin-Child, conceiv'd at the sametime which the Mother was, as all Twins are; and that in this Case there was only this difference, that the one was formed within the Body of the other. I demonstrated to him, that his Opinion was not tenible, since this Woman had no bigness of Belly, till the twenty sixth or twenty seventh Year of her Age; that becoming with Child, and having reach'd the due time of her going, she probably felt great Pains, which did not end in a Delivery; that 'twas likely that the Infant, in the time of these Pains, might burst the Purse which contain'd it, and being got out into the Cavity of the Belly, remain'd there for the space of twenty Years, that its Mother carried this big Belly; and that

that so much the rather, as that the Waters themselves in which the Infant floated in that Purse being spilt, and having followed, it might preserve it all that time, because they serv'd instead of a Pickle, in which it was contracted, and as it were petrified, scarce retaining any longer the shape of a Child.

These two Relations don't prove the Possibility of the Operation which we are treating of, with regard to a living Woman; because 'tis certain, that these Children found in the Vagina of the *Abdomen* were not form'd in the ordinary Cavities of the Matrix, which we call its Fund, but in one of the Tubes; it not being impossible that an Egg might stop there, which growing to a certain bigness, this Tube which could not contain it any longer, broke, to make way for the Child to fall into some part of the lower Belly; and the Vessels of this Tube not being so considerable as those of the Matrix, did not lose Blood enough to kill the Mother: Thus I persist in my Sentiment, which is, that a Child, whatsoever Efforts it may make, cannot burst the Matrix, because it may be extended as much as is necessary to contain it: And we see also every day, that 'tis capable of holding two, and often three, without breaking.

I don't distrust these two Stories, which to me seem possible, in the manner which I have just been telling you: But I am more ascertain'd of one which I shall relate to you in two Words, and which confirms what I advance. In June 1681, one of the Bed-chamber Women to the *Dauphiness*, being six Months or thereabouts gone with Child, was surprized with excessive Pains in the Region of the Womb; the Cries which she utter'd, shew'd that Part to be none of the least sensible; they were follow'd by Convulsions, her Belly appear'd visibly swell'd, and she dy'd a quarter of an hour afterwards. The Queen and *Dauphiness*, surprized at such a sudden Death, commanded me to open her Body, to explore the Cause of it; which I did the next Day, in the Presence of Monsieur *Dacquain*, then the King's first Physician, and Monsieur *Fagon*, first Physician to the Queen. I found the Cavity of the Belly intirely full of Blood, and a Child laid on the great Intestines. I examin'd the Matrix, which was not like that of other Women; it had two Funds or Bottoms, in one of which I found a Mole, or false Conception; and in the other, which was the Supernumerary, had been form'd a Child, which having liv'd 'till the sixth Month, had torn that Part, which not being either so firm, or so thick, as the Fund of an ordinary *Uterus*, was not able any longer to resist it: But the Vessels which nourish'd it, having by their Rupture abundantly pour'd the Blood into the *Abdomen*, the Woman soon dyed. I have published a Relation of this Accident, under the Title of an *Anatomical History of an extraordinary Matrix, with the Approbation of the two first Physicians*.

'Tis

Other Reasons against it.

'Tis not only the Cruelty of this Operation, and the inevitable Death which follows it, which ought to divert us from ever thinking of the Performance of it; but besides, Religion forbids it: For it being put to the Question, which ought to be fav'd, the Mother or the Child, when the Midwives or Male-Operators find it impossible to preserve the Life of both, the Doctors of the *Sorbonne* and the most famous Casuists have decided it, that the Life of the Mother ought rather to be fav'd than that of the Child. On which Principle we ought to take special Care how we undertake an Operation, which will infallibly kill her.

Some tell us, that this Operation has been perform'd at *London* and *Amsterdam*; and we daily hear the good Women, and Men as credulous as they, affirm, that it has been practis'd on their Neighbours and Companions. But I rank all these Stories amongst those related of Spirits and Conjurers, and believe none of them. So many Extravagancies are reported, that a Man of Judgment ought to distrust every thing, and believe no more than what is related to him by credible Persons: And none of our celebrated Chirurgeons having practis'd this Section, I am in the right to condemn it by their Example.

Refutation of a modern Author.

A Modern Author, who advises and approves this Operation, tells us, to authorize his Proceeding, that a Woman of *Château Thierry* came to the *Hôtel-Dieu* at *Paris* to be cur'd of a *Ventral Hernia* of an excessive bigness, who after three Dressings dyed; before which, having assured the Chirurgeons that the *Cæsarean* Section had formerly been performed on her, the said Chirurgeons of that Hospital having the Curiosity to open her after her Death, found that the Wound of the Belly not being well re-united had occasioned the forming of the *Hernia*, and observed on the Body of the Womb, as well externally as internally, some Lines which marked out the Place that had been cicatriz'd. To all this I answer; first, that those Lines might be those which we find naturally there, and which have impos'd on some Authors so far, as to engage them very unjustly to assert, that they separated the Matrix into two Cavities; the right of which was destin'd for Boys, and the left for Girls. I add, that the Wound in the Belly might be caus'd by some great Abscess on that Part; and that if this Woman averred, that she had suffered that Operation, she was not the first, who after being delivered in Convulsions without her knowledge, had been made believe that the Child was taken out of her Side; and lastly, I conclude, that tho' this Story were true, it proves that this Operation ought to be ranked amongst the number of those, whose Performance kills the Patients, since after that this Woman only languished out a miserable Life loaded with Indispositions, which at last brought her to an Hospital, where she met her Death. The

Observa-

Observation which I am going to relate, seems yet more to favour our present Opinion.

Monfieur *Ralean*, Chirurgeon at *Xaintes*, tells us, that in *Another* the Year 1689 he performed the *Cæsarean Section* on a Mer-Perfor-
chant's Wife of that City, who could not be delivered after a *mance*,
three Days Labour; that he executed it in the Prefence of his *with its*
Brother Chirurgeon, Mr. *Jolain*: That the Child liv'd two *Answer.*
Days, and the Mother was cur'd. Passing by *Xaintes* with
the King of *Spain* and the Princes, I lodg'd at the House of
Mr. *Moreau*, an able Phyfician, by whom I informed my self
of the Truth of this Story. He told me, that he was not pre-
sent at the Operation, that he did not see the Patient 'till 15
Days after, when he was accompanied by three or four Phyfi-
cians, and that they found her in a fair way of Cure; that this
Woman became and continued lame; that she had no more
Children afterwards, and that after the Death of her Husband,
she retired out of the City, and lived at a Country-House.

But this Story, whose End seems happier than the former,
justifies what has been said of the Chirurgeon, that he was too
rash in this Undertaking, since three Days of Travel don't
make out a Time long enough to despair of a Woman's Deli-
very by ordinary Means: Who knows whether the Womb is
well cicatrized, and whether there did not remain a Fistula, or
an Ulcer, which incessantly running, must have obliged the
Patient to a languishing Life, during the small time which she
continued in the World after this Operation.

I don't yield my self confuted by these Relations, nor by
the Reasons of those who tell us, that the Operation ought
never to be performed, but in case of an Impossibility of be-
ing otherwise delivered; for you will find very few Women
which cannot be naturally delivered: 'Tis always the Impati-
ence, either of the Woman, or the Operator, or those present,
which raise a Despair of the Child's coming out the ordinary
way; there is nothing to be done, but wait; if the Womb be
found of a very hard Consistence, and is slow in opening, don't
grow impatient, it will accomplish in four or six Days what
it could not in two. We ought not often to regulate our selves
by the Cries of the Woman, some on the least Pains which
they begin to feel will cry out louder than others in the great-
est; this is what we ought to examine; and, above all, to
make use of Patience, because that Delivery being Nature's
Task, she always brings about her End, especially when the
Midwife and Operator assist her by the Means which Art pre-
scribes, and Prudence provides in particular Cases. We ought
then to refer it to her, since 'tis certain that all Women are
generally provided with the necessary Dispositions for their De-
livery, some sooner, others later.

*Confirma-
tion of the
preceding
Reasons.*

By all that has been said, you see clearly that I am utterly against those who advise the Application of this *Cæsarean Section* to a live Woman. Mr. *Mauriceau*, one of the most celebrated Men-Midwives of these Times, and who has written very judiciously on the Delivery of Women, absolutely condemns it in this Case: You may see his Reasons in the Chapter in which he speaks of this Operation; but I am of his Mind, that it ought to be performed, and farther, that we are obliged by an express Commandment of the Law, to open the Bellies of all pregnant Women in the very next Moment after their expiring, when they have not brought forth their Fruit.

Two principal Motives urge the Chirurgeon to perform the *Cæsarean Section* on a pregnant Woman as soon as she is dead; the one, to endeavour the saving the Life of the Child; and the other, in order to procure its Baptisement.

*The Case
in which
it ought
to be per-
formed.*

If a Chirurgeon is present, when a Woman eight or nine Months gone with Child happens to be assassinated or killed by some fatal Accident, or suddenly ends her Days by an Apoplexy, a Fright, &c. it is not impossible, that by an immediate opening of the Belly, he may draw out a yet living Infant, and by that Means secure it from a Death, which would unavoidably happen to it, if it stay'd in the Matrix but some Moments after the Principle of Life in the Mother is destroyed. There are Instances of Children taken out of the Womb in this manner, which have lived the space of an ordinary Life. Wherefore, without any Loss of Time in arguing, the Chirurgeon must expeditiously proceed to the Operation, in order to endeavour to save the Life of the Child, as has sometimes been done.

If the Woman has not been pregnant above four, five or six Months, 'tis not at all probable that the Child should long survive its Mother; nevertheless, the *Cæsarean Section* ought to be performed, in hopes of finding a living Child, and baptizing it before it dyes. So that in what time soever of the Pregnancy it falls, and by what mortal Cause soever the Woman dyes, her Belly ought to be open'd; that if it be not possible to preserve the Life of the Child; at least, 'tis reasonable to hope to be able to baptize it; which may be more securely and expeditiously done this way, than any other.

The Term of *Embryhelkein*, which the *Greeks* have bestowed on this Operation, being derived from *Embryon*, an Infant, and *Helkein* to draw, hints to us its being practised before there were any *Cæsars*: As also, that the *African Scipio* was not the first who was brought into the World this way; and if the Name of *Cæsarean* Operation continued, 'twas only an Account of its being easier to pronounce, than that of *Embryhelkein*. Let's now examine how 'tis performed.

Those who advise this Operation to be applied to a living Woman, tell us, that with the Incision Knife, A, we must make a large Incision on the lateral Part of the Belly, tracing out the Shape of a Crescent, and immediately afterwards open the Fund of the *Uterus*, in order to draw out the Child by the Apertures made in that Organ, and the lower Venter, by the same Instrument; that, with the Sponges, B, B, we soak up all the Blood which flows out in this Operation; that we ought not to apply any Suture to the Womb, because, contracting it self, the Lips of the Wound re-approach each other; but that the Belly must be sewed up as in the *Gastrorrhaphy*, with the two curve Needles, C, C, threaded with the String, D, D, and the Suture being performed, must be cover'd with the Plaister, E, and over that with the Bolster, F; and then with the circular Bondage, G, which is fasten'd by the Scapular Bandage, H; taking care daily to dress this Wound, which, as they testifie, heals as easily as others in other Parts of the Body.

Those who never practise it, but on dead Women, wait their Expiration; at which Instant they apply to their Work with all possible Diligence. To which purpose the Chirurgeon does not place the Body on the Table, as is done in ordinary Apertures, he does not with Ink trace out the Place of the Incision, which he does not make on one of the Sides of the Belly, because thicker there than in the middle; and for the greater Expedition, he avoids making the Incision in form of a Crescent, as some direct. He begins then with clapping the Tap or Gagg, I, into the Woman's Mouth, to keep it open; he then uncovers her Belly, and with the Knife, K, makes an Incision below the *Xiphoeides*, or *Ensiform Cartilage*, ending it above the *Ocnubis*. As soon as he has pierced the *Peritonæum*, into the Orifice he introduces one of the Fingers of his left Hand to raise it up, and with the Scissars, L, he finishes the Aperture of the whole length of the Belly, when he immediately discerns the Matrix, by reason that the *Epiploon* is mounted upwards, and the Intestins ranged on its Side; and, with the same Knife, he opens the Matrix, by making an Incision large enough for the Passage of the Child, which he finds enveloped with its Membranes, which must be torn, if tender; or cut, if too hard to be opened and separated by the Nails. The Child thus discovered, the Operator raises its Head with the left Hand, and, with the right, pouring Water upon him out of the Ewer, M, baptizes it without any Delay; then he takes it out of the Womb, ties its Navel-string with the Thread, N, about an Inch from the Body, and about half a Finger's breadth beyond the Ligament cuts it. He then delivers the Child to some Woman, who having wrapt it up in a piece of Linnen very well warm'd, keeps close by the Fire, where she makes use of all possible Means to strengthen it, either by re-warming,

warming, washing it with warm Water or Wine, breathing in its Face, and opening its Mouth, in order to make it swallow some Drops of a spiritous Liqueur.

If I told you, that the Mother's Mouth ought to be kept open during the Operation, 'tis not that on this Head I run into the vulgar Error of the Populace, which will have the Child respire in its Mother's Womb; and that when the Child is found dead, as it frequently happens, 'tis because the Chirurgeon did not put the Gagg into the Mother's Mouth: I know this Circumstance to be wholly usefess, but it ought not to be omitted, in order to please the By-standers, and avoid all the foolish prating (with regard to the Chirurgeon) of some silly Women, or People wholly ignorant of Anatomy, not knowing that there is so little Communication betwixt the Mouth and the *Uterus*, that the Air would rather pass to the *Fœtus* through the Privities, than any other place.

Other Precautions.

The Aperture of the Matrix is not to be made with too much Precipitation, nor must the Penknife be thrust too far at once, on a Supposition that the Womb is two Fingers breadth thick, as most Authors have asserted; for in so doing he would certainly wound the Infant, it being beyond question that this Part is thinner in the last days of Pregnancy, than in the first; and that, like other Membranes, its thickness diminishes in proportion to its Extension, it being sometimes as thin as a strong Parchment. What deceived these ancient Writers, is, that having open'd the Place to which the *Placenta* was fix'd, that is, at its Fund, or bottom, they confounded the thickness of this after-Birth, with that of the proper Substance of the Matrix separated from its *Sanguinary* and *Lymphatic* Vessels, which are really very thick, but whose Tunics are very thin. They have yet, on this Head, form'd many Arguments, which are wholly confuted by Experience it self.

The Chirurgeon ought to be informed of this natural Disposition of the Matrix, for fear of his being deceived on such Occasions; but if he has but a small share of Dexterity, he will not hurt the Child; for under the Matrix there are *Involucra*, or Purses, which contain the Waters in the middle of which the Child swims; which facilitate the Operation, and hinder the Chirurgeon's wounding the *Fœtus*, at least if he does not go to work inconsiderately and stupidly.

We discover whether the Child is living or dead, by feeling the Navel-string; if we there perceive a Pulsation, 'tis a sign that 'tis alive, and then it ought to be baptized; and if we feel none, there is all the Reason in the World to believe that 'tis dead. Upon which arises a Question, whether it ought to be baptized or not? For some Casuists require incontestible Signs of Life as necessary in order to the Administration of Baptism, alledging, that 'twould be a Profanation of that Sacrament, to admit the Celebration of it on a stinking Carcass.

But

But as for my own Practice, I baptize all, and that for two Reasons: One of which is, That it may happen that an Infant may be alive, and have a few gasping Sighs to breath out, though we cannot discover any manifest Pulsation of the Navel-string; in which Case 'twould be to fall into the fatal Misfortune of refusing Baptism to a living Child, because not strong enough to give us any certain Signs of its Life. The other Reason is, that in these sorts of Operations the Patient's Chamber is always full of Relations or Neighbours, the most of which are intimidated and pre-possessed with the most unreasonable Prejudices. I have seen them catch up the Child just taken out of its Mother's Womb, where it had been dead several days, warm it by the Fire, and at the least Motion which they seem to perceive it to make, as the never so little opening an Eye-brow, stirring a Lip, &c. they immediately crie out, and assure the Company that the Child is alive, not at all considering that these Motions were the Effects of those which they forced the Head to make by their Endeavours to restore it to Life. If in such cases the Chirurgeon refuse to baptize the Child, he will draw upon him the Hatred of the Publick, and none of the Women will ever forgive him.

There is yet an Expedient which remedies all these Incon- *How to*
 veniencies, which is the conditional Administration of Bap- *baptize an*
 tism, by using the following Words, with Intention to perform *Infant in*
 what the Christian Church orders on the like occasion; *If thou its Mother's*
art living, I baptize thee, in the Name of the Father, Son and Belly.
Holy-Ghost, Amen. So that if the Child is alive, 'tis duly bap-
 tized; and if dead, the Carcass is not christened; and the most
 scrupulous cannot censure this way of proceeding, since the
 Church it self does not baptize those Children, thus christened
 without Ecclesiastical Ceremony, on a pressing Exigence, any
 otherwise than under Condition, and in case that they have
 not been formally baptized, when we were obliged to do it
 without Ceremony.

When I prescribe Rules to the Chirurgeon, how he ought
 to deport himself in the baptizing of a Child, I suppose no
 Priest to be at hand to do it, and that Circumstances are so
 pressing that there is not time to procure one; as when a
 Woman, by the Reception of a Blow, falls instantly dead.
 But when the Disease allows any time, we ought never to
 neglect the sending for a Priest, especially one that belongs to
 the Parish, and to entreat him, after the Agonies of the Mo-
 ther, to stay a Moment longer to baptize the Child: In which
 case the Chirurgeon is no farther concerned than in the Per-
 formance of the Operation. —

The Chirurgeon must leave no Endeavours unattempted, to
 discover whether the Child is living, or not; because, accord-
 ing to the Custom of many Countries, if the Infant survives
 its Mother, the Father inherits all the personal Estate; and on
 the

the contrary, if the Child dy'd before the Mother, her Relations are the Heirs; so that in case of a Law Suit betwixt the Father and his Wife's Relations, which frequently happens, the Chirurgeon is to be the decisive Evidence; 'tis thus far in his Power to occasion the getting or losing the Cause of either side, and the Sentences of the Judge turn on his Report, which lays an Obligation on him to be able to make it with Certainty, with regard to his Conscience.

What to be done after the extraction of the Child.

The Operation being performed with all the Precautions already hinted, if the Child be found alive, the Care of it belongs to the Relations; but if dead, it must be returned into its Mother's Belly, which must be sowed up in the same manner as dead Carcasses are after opening.

Thus, Gentlemen, I have shewn you all the Operations practis'd on the inferior Venter, amongst which you don't find any Cauterizings of the Ventricle, Liver or Spleen, which some Physicians suppose practicable. They pretend, that when these Parts are as it were stupified, or render'd too sluggish in the performance of their Functions by some frigid Indisposition which slackens their Activity, they ought to be awaken'd, and warm'd by the application of several burning or red hot Irons to the nearest Region of those Parts; but the Pain which the Patients are put to by these Operations, without reaping any advantage, has engaged us to reject them, and accuse those Persons of Cruelty who are able to put them in Practice.

Softening of the Modern Chirurgery.

Good Chirurgeons have retrench'd the Fire from all Operations perform'd on the Flesh, and no longer make use of any more than a few burning Irons on those Bones which are insensible, on which occasions also they are but very rarely us'd. Our Art has abandon'd those harsh Methods, by which Farriers torment with burning Irons those poor Horses which they might otherwise Cure: And if their way of making use of Irons and Fire strikes a horror into the Spectators of this Practice on Animals, who is there could refrain complaining, who could see a Man's Belly burned, whose Cries would move the most stony Heart?

Condemnation of those who undertake to cut out the Milt.

About thirty Years past there arose a certain Sect of Chirurgeons which applauded their being the first Inventors of an Operation which they pretended to put in Practice: It was the taking out the Milt, and was called the *Unspleneing* or *Unmilting* of a Man. They looked on this part as useless and noxious, because (perhaps) unacquainted with its uses; and, in pursuit of this Opinion, they prescribe the making an Incision in the Left *Hypochondrium*, thro' which they take out the Milt, and after having made a Ligature of the Vessels, boldly cut it off. This Operation being performed on some Dogs which did not thereupon dye on the Spot, they thence deduc'd and proclaim'd the Advantages which would accrue to

Man-

Mankind by it; but all the Animals on which it was practis'd dying a few Months after, there was never so much as one Man which would try it. 'Tis therefore that no longer mention is made of these cruel Operations, which owing their existence to some crude Brains, found a Sepulture in that of their Inventors.

The End of the Second Demonstration.

R. Mearns



H

T H E



T H E
Third Demonstration
O F
Chirurgical Operations.

Of the Operations Practis'd on the Bladder, Yard and Matrix.

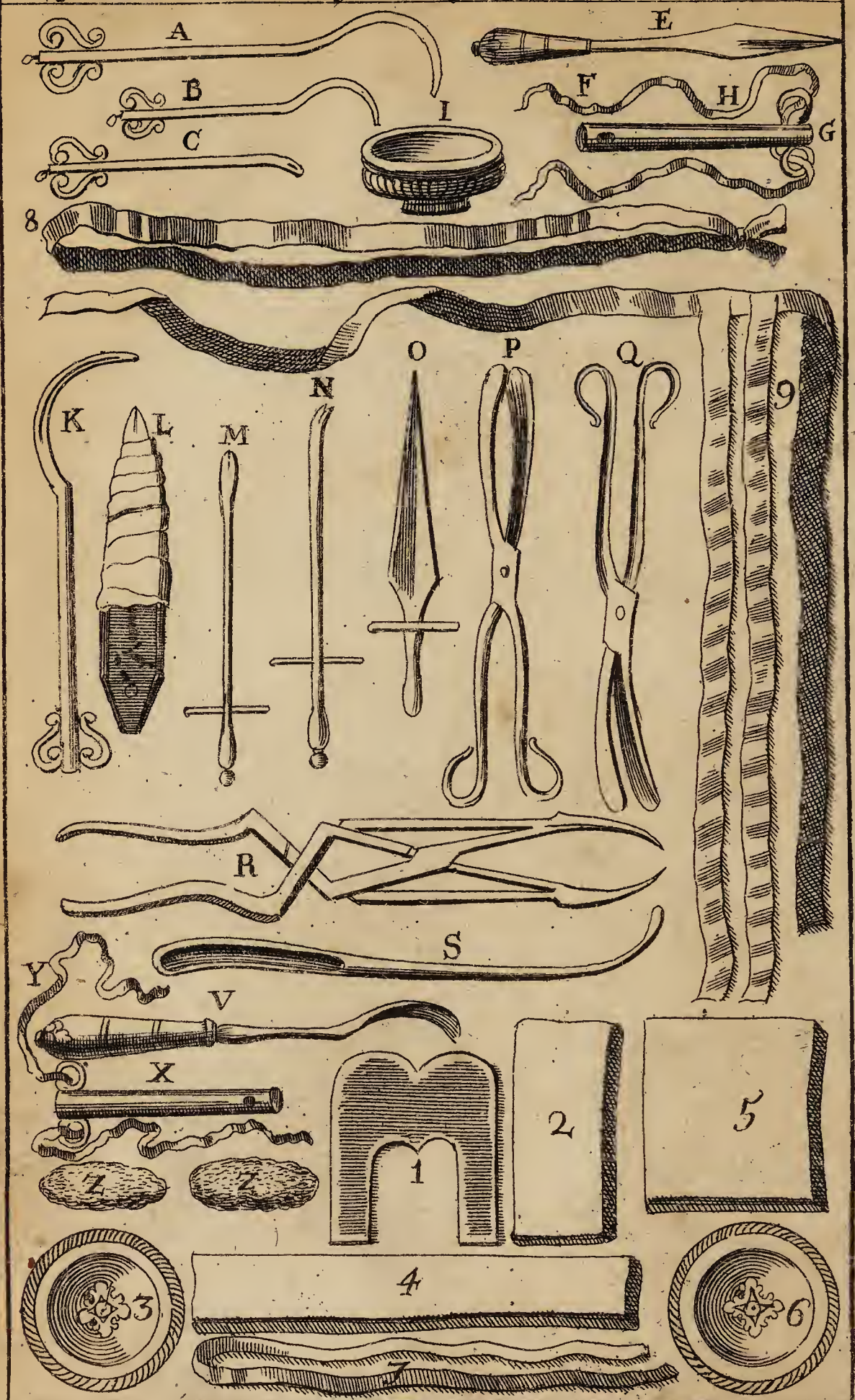
GENTLEMEN,



THE same Reasons which oblig'd us to begin our Operations with those Practis'd on the Lower Belly, engage us to continue them by those required by the Diseases incident to the Bladder, Yard and Matrix: Which Parts not being much less subject to Corruption than the others of the inferior Venter, we shall go to work with them, in order to separate them from our Subject.

The Extraction of the Stone, a very difficult Operation.

One of the greatest and most difficult Chirurgical Operations is, the extraction of a Stone out of the Bladder. *Hippocrates* found it so painful and dangerous, that he resolv'd never to attempt it; and most Chirurgeons in our Days following the Examples of the Ancients, as well as them, inhibit the performance of it, leaving the Execution of it to those who make



it their sole Business, and apply their utmost Care to excell in it.

The *Greeks* term'd these sort of Chirurgeons *Lithotomoi*; and *Etymolo-* we, at present, call them *Lithotomists*, from *Lithotomy*, the *gy* of *Li-* Denomination of this Operation. This Word is compounded *thotomist* of the two *Greek* ones; *Lithos*, which signifies Stone; and *Temnein*, to cut or separate. This *Etymology*, tho' just, has met *Objection* with its Censurers, which pretend that 'tis not properly adapt- *answer'd* ed to the Operation to which 'tis apply'd, since it does not cut the Stone; and the Word *Cystitomia* more emphatically expresses its Intention, being derived from *Cystis*, a Bladder, and *Temnein*, which signifies to divide, by reason that it is an Incision made in the Bladder. To which is reply'd, that *Cystitomia* is the Word which is given, and perfectly well adapted to the Operation on the Bladder, destin'd for the drawing out the Urine, which cannot otherwise make its way out; to the Truth of which you will subscribe, when I shall have demonstrated to you that Operation. Besides, under the Name of *Lythotomy*, are expressed and described all the Operations in use, with regard to Stones; and 'twould be to give the Chirurgeons an unnecessary Trouble, and vainly fatigue the Students of their Art, by imposing on them the Use of a new Term, which would not more significantly express the thing which is already known to all the World by the usual Name: Add to this, that though the Stone is not commonly broken, yet the Ends of cutting the Organ, being to draw out the Stones, to separate and disengage them when fastened, to diminish or attenuate them when soft or friable, or to break them into bits when too big, in order the more commodiously to loosen them from the Parts, we cannot assign a Name to express this Operation better than that of *Lithotomy*.

By *Lithotomy* we then understand a Chirurgical Operation, *Definition* by which we extract out of the Bladder, the Stones therein *of this Ope-* contained; and, under the Name of Stones, we generally com- *ration*prehend all *exotic* Bodies; as Clots of Blood, Membranes, harden'd Flesh, and whatever, by their Mass, Bigness and Consistence, obstruct the Course of the Urine, and oblige us to apply this Operation, to clear the Organ.

Of the Stone in the Kidneys or Bladder.

WE daily find Stones in the Reins and Bladders of Men; there are but few which do not, with their Urine, void Sand, Gravel, or some sort of Stone; but 'tis very difficult to know how, and in what place these *exotic* Bodies can be generated. This is a Secret which the Chirurgeon ought to use his utmost Efforts to discover; wherefore, without being discouraged,

couraged, we shall offer what we think to be the Cause of their Operation.

Of the Original of the Stone.

All our Authors which to this time have written on this Subject, and amongst others, *Fernelius*, who, after *Hippocrates*, has taken most Pains in the Explication of it, have told us, That these Stones were formed from the most viscous and terrestrial part of the Urine, that the most subtile part of this Excrement being consumed by the Heat of the Reins, the grosser petrifies and hardens, as Pots of soft and pliable Earth do by the heat of the Furnace; and that then the Pores thro' which the Urine separates it self from the Blood being too narrow, the thickest Particles of the Urine stopping in these Conduits, petrifie by their long continuance there, and the heat of the Parts, where they increase by a continual Aposition of Matters one upon another: So that, according to them, there are three Causes of the Generation of Stones; the material, consisting of whatever is most viscous and terrestrial in the Urine; the instrumental, which are the too narrow Passages of the Reins where this Matter is stopped; and the efficient, ascribed to the heat of the Place, which, by drying it, forms the Gravel or Stones.

Three Causes of it, according to the Ancients.

They were confirmed in this Opinion from their daily Observation, that Children are more subject to the Stone than grown Persons, and especially those fed with gross and terrestrial Aliments: The Reason of which is, That Children eating very often, cannot perfectly digest, and, amongst others, those of Peasants which feed on nothing but coarse Bread, ill baked and ill made, Cheese, and leguminous Plants of ill Digestion; there remains a crude and indigested Juice, which being conveyed to the Reins with the Blood, stops in the Porosities of their mammillary Caruncles; and staying there grows hard, and petrifies by the natural Heat, which causes the Expression out of the Teats of all the serous part of this Juice; so that these three Causes just mentioned happening most frequently to center in Children, 'tis not surprizing if we find so many of that Age afflicted with the Stone.

In whom the Stone most frequently grows.

The Proof of what I have advanced, is manifested by the scrophulous Tumours, Kernels under the Ears, Excrescencies and other Swellings of the Glands, which frequently happen to Persons in that first Age. The Matter of these Tumours is a crude Juice, distributed to the Glands where it stops and remains, by reason of the streightness of the Passage; of which Heat is the efficient Cause, by reason, that consuming and drying up what is most liquid, it so hardens this Matter, that it wholly turns to a stony Substance.

Those who have frequently visited the Hospitals, called the *Hotel-Dieu*, or the *Charité* at *Paris*, the two Places where most Persons are cut, will agree with me, that of thirty which suffer this Operation, above two thirds of them are generally under

under the Age of 10 Years, and almost all of them Children of the Inhabitants of Villages : Which plainly indicates, that the first and most general Cause of the Stone is ill Food, and that this Production finds its Principle in the terrestrial, ill dress'd, and ill-digested Aliments ; and what we read in those Authors which have treated on that Subject, that formerly 'twas not usual to cut any Patients at any other time, than from the Age of 6 to 14, proves to us, that the Number of those afflicted with the Stone was always greater amongst those of young Years, than those of an advanced Age.

This Opinion, concerning the Cause of the Generation of Stones, appeared so probable to all the Ancients, that no Person ever dar'd to contest it with them ; but our Times have produced some who have been so bold as to assert, that those who believe that Stones result from the grossest part of the Blood, are in the wrong ; affirming withal on the contrary, that they are formed of the most subtile Corpuscles of that Mixture. To defend their *Hypothesis*, they distinguish two Principles in the Urine ; the one a Volatile and Urinous Salt, like Spirit of Nitre ; and the other an Ethereal Sulphur, which participates of the Nature of Spirit of Wine : They call the first the coagulating Spirit, and will have it, that mingling with another Spirit, which they find in this excrementitious Liquid, and which is called the Terrestrial and Styptick Spirit, it occasions a Condensation, which forms a stony Body.

To prove this Opinion, they have recourse to Chymistry ; alledging, that if we mix Spirit of Wine with Spirit of Nitre, or Spirit of Sal Armoniac ; after some Fermentation, it immediately turns into a Coagulum, which may grow to a solid and compact Body, like that of a Stone.

I am so far from condemning those of this Sentiment, that, on the contrary, I think they have deserved our Praises, for endeavouring to penetrate into such an abstruse Cause : But on the other side, they ought not to expect us to follow them blindly ; 'tis our part to examine, without Prejudice, what they advance, to confront it with what the Ancients have told us, and to espouse the Side where we find more Solidity than Probability.

This last System, is that of the ingenious *Van Helmont*, who, with the three Spirits which I have mentioned, had occasion for another Spirit of Putrefaction, excited by a corruptive Ferment which he hunted for in the Smell of the Urine, in order to actuate the other, and produce the Coagulation of the Stone : But tho' the Imagination can scarce represent to it self all these Principles, yet this modern Opinion is not useless to us ; for reconciling it with the ancient *Hypothesis*, they will together afford us some Lights, which will conduct us to the true Knowledge of the Generation of the tartarous Substance of which the Stone is form'd.

Of the
Parts where
the Stone
grows.

Some Authors make two sorts of Stones, one of which, they tell us, is form'd in the Reins, and the other in the Bladder. They distinguish them, by representing that in the Kidnies to be smallest, lightest and reddest; and will have that in the Bladder to be bigger, harder and whiter; adding, that old Men are most liable to the Stone in the Kidnies, and younger Persons to that in the Bladder. But these Observations are uncertain; for in Young as well as Old we see Stones of all Colours and Sizes; and in the one as well as the other they begin to form themselves in the Kidney, and increase in the Bladder, in manner following.

How Stones
are form'd.

The essential Principle or Foundation of the Stone, is always some Particle of gross and ill-digested *Chyle*, which being carried along with the urinary Serosity to the Reins, and insinuating it self into one of the small Cubes of the mammillary Bodies, which, filtering this Serosity, become clogg'd and stop'd up; so that, by the assistance of the coagulating or acid Spirits, it hardens and grows stony. The tartarous Part of the Urine coming afterwards to touch this small beginning of a Stone, sticks to, unites with, and augments its bulk; and a fresh supply of the Tartar of Urine daily joining it, it grows 'till the continual course of this fluid forces it to loosen and fall into the *Pelvis Renum*, or basin of the Kidney, from whence, by the *Ureter*, 'tis conducted into the *Bladder*; where finding a vast and free space, it continues more easily, and grows bigger and bigger by fresh accession of Matter, 'till at last, by its bulk, weight or point, it occasions insupportable Pains and Inconveniencies, and forces us to extract it by Operation.

Of the Seed
and Bud or
Kernel of
the Stone.

The first Principle which some term the Seed of the Stone, and which is called the Kernel by *Fernelius*, not being able to pass through the small Teats of the renal Glandules, augments it self by the several lays of fresh Tartar, like Comfits made of Aniseeds which are covered with several Involucra of melted Sugar, in which the Confectioner dips them from time to time. For if you break a Stone, you will then observe the Kernel with its several Lays, which will be of different Colours, according to the various Matter of which they are composed: As in breaking a confectioned Aniseed, we see the several sorts of Sugar with which they are confectioned.

Instances
of great
Stones in
the Reins.

When I told you that Stones, after their formation, fall into the Basin of the Kidney, you ought to have understood me, that it very frequently, but not always, happens so; for sometimes the Stone is so shaped, that 'tis impossible for it to disengage it self from the Cube where 'twas first formed: When it grows as in the Bladder, and may increase to such a bulk as to kill the Patient; of which there daily happen several Instances, the most famous of which that has reach'd my Knowledge is that of Pope *Innocent XI.* who dying on the 13th of

of *August*, 1689, was open'd, and in each Rein was found a Stone ; that in the left Kidney weigh'd nine Ounces, and that of the right six. This fact is so uncommon, and the bulk of the Stones so extraordinary, with regard to the natural Capacity of the places where they were found, that I have caused them to be engraven from the Draught which was sent me from *Rome*, in order to shew their bulk and shape by the annex'd Print.

Stones found in the Kidnies.



WHEN a Stone disengages it self from the Kidneys, and Of Nephre- makes its way to the Bladder ; if small, it slides easily tick Pain into that Purse ; but if great, being obliged to dilate the Ureter

in order to its passage, it occasions violent Pains, which are proportionably encreased by the inequalities and sharp Angles with which it lacerates and pricks the nervous Membrane of that Tube. This Disease is often termed the *Nephritick Cholick*; but improperly, the word *Cholick* being only applicable to those Indispositions which affect the *Colon*; 'tis therefore properly named the *Nephritick Pain*, or *Nephritis*, from *Nephros*, Rein, by reason it excites a Pain in the Reins, and not in the Intestine called the *Colon*.

Of the
Cause of
Nephritick
Pains.

These *Nephritick Pains* are excited by the Sand or Gravel; when they proceed from the former, they are but light, at least if the quantity of the Sand be not very great; but when they are owing to the latter, they are more sensibly felt, because the Particles of the Gravel are rough, irregular and courser than those of Sand; and when 'tis a Stone, they are more violent: In which case recourse is had to general Remedies which are frequently prescrib'd, pursuant to the Accidents which press hardest.

Signs of
Nephritick
Pains.

The Signs which discover to us *Nephritick Pains*, are, that they begin about the Kidney, continue along the *Ureter*, and tend to the Region of the Bladder: The Patient is sensible of a Numbness in the Thigh, the Testicle on that side is drawn upwards by the *Cremaster Muscle*, which is in pain; he cannot void his Urine without pain, and he Vomits on this occasion. I refer you to common Practice for the Remedies proper for this Disease; which I have mentioned for no other reason than to enable you to conceive why we have reason to suspect those Persons affected with a difficulty of Urine, of having a Stone in the Bladder, especially whenever that difficulty has been preceded by *Nephritick Pains*.

After having explain'd to you how the Stone is produced, I must tell you my Sentiments concerning the Formation of Sand. As you see the Tartarous part of Wine adhering to the interior Surface of the Cask in which 'tis contain'd, that it sticks to the Vessels in which thick Liquors are boil'd, and that it forms it self into a Crust within the Tubes, thro' which Water continually runs. Inlike manner these sorts of Corpuscles contain'd in the Urine, conglutinate in the Basin of the Kidneys, and along the *Ureters*; and being there coagulated by an acid Spirit, or by the intermixture and strict union of their branch'd Parts, they petrific, and at last stop the Passages, if the viscid Humour incessantly separated by the Glands of the *Ureters*, to moisten the Cavities, lest the Membranes should be prejudiced by the urinous Salts, does not forcibly loosen this Tartar by slow degrees, that it may be by the Urine washed into the Bladder, into which it accordingly falls, divided into small particles like Sand, of which there are few Persons who don't daily void some in their Urine.

This Sand is frequently white, and sometimes reddish, and appears at the bottom of Chamber-Pots; and if the Urine be left in them for some time, we find the same Tartar stick to their sides, and grow into a Crust; from whence we may securely conjecture, that Urine contains a Matter proper for Condensation, and a Spirit capable of performing that Petrifaction.

Monfieur *Tolet*, who has written very well on the Subject of *Lithotomy*, after a long Practice in the Hospital of *la Charité* at *Paris*, under the Illustrious Monfieur *Fannot*, the most celebrated *Lithotomist* of that time, tells us, that he cut an *Italian Soldier*, through whose Ureter a Tag of a Point had forced into the Bladder, where a Stone was formed of the Matter which stuck to the Tag, and in process of time hardened. The same thing happen'd to another, who by a Musquet had a Bullét shot into his Bladder, where it serv'd for a Basis of a Stone, of which the Patient was forc'd to be delivered by *Lithotomy* several Years after. These Experiments sufficiently confirm *Fernelius's* Assertion, that all Stones proceed from a Kernel; but refute what he adds, that this Kernel always proceeds from the Kidney, and that 'tis in the Bladder that the Stone receives its Perfection, growing and hardening by slow degrees; for 'tis not impossible that there may pass into this Purse as well as the Kidney, some Particle which may serve as a Basis of the Stone.

Experiment of an extraordinary Case of the Stone

There is also a Stone whose Nature is termed sandy, which is form'd in the Bladder from several small grains of Sand, which unite together by vertue of a viscus Matter, which serves them instead of a Cement: This sort of Stone is gather'd in a small time, but is not so hard as that composed of several lays over one another; and accordingly easily breaks on the Forceps, when the drawing of it out is attempted by this Operation.

Of sandy Stones.

I have told you that Stones pass thro' the Ureters from the Reins to the Bladder: Those Persons to whom this happens, have their Ureters dilated in proportion to the Stones which pass thro' that Conduit, which not being generally larger than a Quill, is sometimes found extended to the bigness of a Thumb, and sometimes to the size of an Intestine; and though this part is capable of such an extension, we yet meet with some Instances of the Stones stopping in its Cavity; which happened to Monfieur *Colbert*, who being open'd after his Death, there were very large Stones in the middle of his Ureters, which had afflicted him with terrible *Nephritick Pains* during the last Days of his Life. But these sorts of Stones remaining in the Kidneys or Ureters, cannot be extracted by Chirurgery; therefore let us pass to them in the Bladder, which are the subject of our Operation.

Dilatation of the Ureters in those afflicted with the Stone.

Two sorts
of Proofs
of the Ex-
istence of
the Stone
in the Blad-
der.

Dubious
Signs.

Falling out
of the Fun-
dament.

Sediment
of Urine.

Irritation
of the Ure-
ter.

Difficulty
of Urine.

Univocal,
and certain
Marks.

Way of ex-
amining
with the
Finger.

Before we proceed to *Lithotomy*, 'tis requisite that we be satisfied that there is a Stone in the Bladder. The Signs which indicate it to us are of two sorts. The first, which we call common or equivocal, may depend on several Diseases of the Bladder, different from those caused by the Stone in the Bladder. The second styl'd proper or univocal, are such as are solely peculiar to the Stone.

The *equivocal Signs* are very numerous; the Patient is afflicted with a continual Pain in the Region of the Bladder, which encreases when he attempts to make Water; which makes him defer, as much as possible, that Evacuation; but the Pain grows yet more violent, by reason of the long Continuance of the Urine in the Bladder; where, inflaming and growing sharper, it more irritates the Parts through which it passes, in order to its coming out; besides, the Patient vehemently straining, in order to accelerate the Evacuation of this Liquid, the *Intestinum rectum* extends it self outwards by his Endeavours to piss. This Accident very seldom happens to Persons of an advanc'd Age, but frequently to Children; and is what is called the falling out of the Fundament. The Urine of Patients is sometimes white, crude and thin, and, at other times, thick, muddy and bloody; and when left to settle, we find, at the bottom, a Sediment like Pus or Matter, and withal, both mucous and sandy. The Patient feels a Pressure on the *Perineum*, from the weight of the Stone, frequently carrying his Hand to his Yard, which he pulls to ease it; he is also sensible of involuntary Erections of that Part, produc'd by an Irritation which the Ureter easily communicates to the perforated Nerves: He finds a frequent Punction about the end of the Yard; His Urine comes from him with Difficulty, frequently Drop by Drop, and sometimes is wholly suppressed.

Tho' all these Symptoms commonly denote the Existence of the Stone in the Bladder, they are not yet such certain Signs, as to be absolutely depended on; for they are also proper to Inflammations and Ulcers of the Bladder and *Urethra*; wherefore they are term'd equivocal, and oblige us to have recourse to others which are infallible.

The Signs which we term univocal, because they cannot regard any thing but the Stone, and never deceive us, are two; the first is, the Finger of the Operator; and the other, his Probe; they are both used in the following manner.

The Chirurgeon having par'd his Nails, rubs his fore or middle Finger with Oyl, (commonly of Olives.) Then seating the Patient on the edge of the Bed, he lays him on his Back, with his Thighs mounted, and wide extended from each other, he then introduces his Finger into the *Anus*, into which he thrusts it as far as possible, and there being only the thickness of the *Rectum* and the Bladder betwixt his Finger and the Stone which it is supposed to contain, 'twill be easy for him to feel that exotic Body contain'd in that Purse, especially when holding

holding the other Hand against the Region of the *Hypogastrium*, he pushes, towards the *Rectum*, any thing whatever that may stick in the Bladder. In Women, the Matrix being placed betwixt the great Intestin and the Bladder, the Lithotomist cannot feel the Stone the same way as in Men; wherefore he must thrust his Finger into their *Vagina*: But in Virgins, for several Reasons which I pass over in Silence, he must not make use of his Finger, neither in the *Vagina*, nor in the *Rectum*, but must do it with his Probe.

'Tis not so easie to probe a Man, as a Woman; the length and curve Figure of the *Urethra* in Men, are the Causes of the Difficulty of introducing a Probe, to perform which Address and Practice are necessary. The Chirurgeon then takes a Probe ten or eleven Inches long, and as big as a writing Quill, generally made of Silver, half of its length being shap'd like a Crescent, and the other half straight. The end of the Curve is half blunt, and the Extremity of that which is straight provided with two Rings, in order to hold it faster. He oyls his Probe, and prepares to introduce it into the Bladder, by thrusting the curve part first into the *Urethra* or urinary Passage: but there being two ways of probing, 'tis the Chirurgeon's part to chuse that which he is most accustomed to practise; the one is, that of taking the Patient's Yard betwixt the Fore-finger and Thumb of the left Hand, and mounting it upwards, whilst he holds the Probe in the same Finger and Thumb of the right Hand, in such manner that the concave Part of the Crescent is towards the Patient's Belly: Then having softly introduced its End into the *Urethra*, he thrusts it forwards 'till it reach the Root of the Yard, when he lowers it, at that Instant, that its Point mounting upwards by passing below the *Os pubis*, may proceed into the Bladder. The other way differs from the former, in the back of the Probe being turned towards the Patient's Belly, and that when 'tis thrust as far as the Root of the Yard, the Instrument must be half turned about, inclining it jointly with the Yard towards the right Groin, and afterwards lowering it; by which Means its Point, pushed on by a small Impulse, will enter the Bladder: And this last way of probing is practised by almost all Lithotomists, who herein shew their Dexterity by this Master-piece of their Art. If when the Probe is ready to enter the Bladder, it meets with any Obstacle, it ought not at all to be forced forwards, because the Obstruction may be occasioned by a small Valve, termed the *Verumontanum*, which is the Place where the ejaculatory Vessels pierce the *Urethra*, and the least Violence offered, would not fail to hurt this Valve; wherefore the Probe must be withdrawn a Finger's breadth, in order to push it forwards again, and remove it from this Obstacle; and thus the Chirurgeon finds his way into the Bladder.

First Method of Probing.

Second Method of Probing.

Inconveniences to be avoided.

The

The Facility of probing Women.

The *Urethra* in Women being short and strait, 'tis not very difficult to introduce the Probe into it. The Patient being lain on her Back, with his left Hand the Chirurgeon separates the *Nymphae*, and discovers the Orifice of the *Urethra*, which is a small round hole, situate between those two Tufts below the *Clitoris*. He then takes into his right Hand a Probe of the same bigness of that for Men, about six or seven Inches long, but straight, which having oiled, he gently introduces into the Bladder, and as well in Men as Women, turning the Probe to the right and left, if there be any Stone he will soon discover it, by the Resistance it will make to his Probe, and the audible Noise which the striking the end of it against that Body will occasion.

Necessity of Lithotomy.

If by the Probe the Chirurgeon is fully convinced that one or more Stones are in the Bladder, the sole way of extracting them is by Operation, which is performed one of the two ways which I shall shortly demonstrate to you; for 'tis a Mistake to think that there are any Medicaments capable of dissolving a Stone in the Kidneys or Bladder. All the boasting Pretenders to the Discovery of any such Remedies are Empyries and Impostors, who taking advantage of the miserable Condition of the Patient, and his fearful Apprehensions of this Operation, promise more than they can perform. I don't blame a Patient's endeavouring to avoid the Pain which that Performance must give him, nothing is so natural as to throw ones self into the Hands of those who offer us a certain and easie Cure: But these sort of People rather deserve Punishment, by reason their Promises are shocking to good Sense. There is no sort of Dissolvent, how vigorous soever it may be, that is able to dissolve a Stone out of the Bladder; and the Reason holds much stronger against the Possibility of finding any that should be strong enough to perform that Dissolution in the Bladder it self, after having passed through the different Conduits, which 'tis necessitated to run through to arrive there, supposing it taken at the Mouth. If strong enough to answer this end, what Effects must it have on the Stomach, Intestins, lacteal Veins, Thoracic Channel in the Heart, Lungs, Arteries, Reins and Ureters; at all which Parts it must touch before it reach the Bladder, the Residence of the Stone which they pretend to dissolve. And farther, if these Dissolvents are to be injected through the *Urethra*, will not the Urine hinder their Success, or will they not rather corrode the Bladder than the Stone?

Mistake with regard to Dissolvents for the Stone.

A hardened Stone not to be dissolved by Medicines.

'Tis then but a poor Refuge, to hope for a Cure by Medicaments; when the Stone is once formed, nothing but *Lithotomy* can draw it out of the Bladder: So that 'tis the Patient's Part frankly to determine in favour of the Operation; and, with utmost Expedition, dispose himself for it, when the Probe has convinced him, that all the Evils which he suffers are the Effects

Effects of a Stone in the Bladder ; for the longer he defers it, the more the Stone increases, and the Performance of the Operation becomes the more difficult and painful. But if upon *The total* probing no Stone be found; and yet the Patient continues to *Retention* feel the Accidents which it usually occasions, and particularly of *Urine* the Suppression of Urine, the most fatiguing of all of them, *requires* the Chirurgeon must relieve him as soon as the Case will per- *speedy Re-* mit, either with regard to it as the Disease it self, or the Ef- *lief.* fect of another Distemper.

The Suppression of Urine is of such Importance, that 'tis *Of the Sup-* scarce possible to retain ones Water above one Day, without *pression of* being reduced to the last Extremity. When the Chirurgeon *Urine.* is come to the Patient, this Disease requires no Delay; for frequently, in these Cases, he is not sent for 'till the Patient has been long without voiding any Urine; and tho' never so little deferred, the Bladder yet fills more and more, the Pain and Danger augment; for which Reason the Chirurgeon ought immediately to go to Work, for the Moments are highly valuable, and 'tis not in his Power to give a too expeditious Satisfaction to the Impatience of the Patient, who with most pressing Instances implores his Aid.

These Reasons have engaged us to shew the Methods of relieving the Suppression of Urine, before we demonstrate to you the Operation to be performed for the Extraction of the Stone. We must go first to the Patient, which is most in haste, for we lye under an indispensable Necessity of frequently voiding our Urine; but as for the Section, we are at Liberty to chuse the time, season and day, at Pleasure.

There are three sorts of Suppression of Urine, each of which *Three Spe-* is distinguished by its peculiar Name; the one of which is *Dys-* *uriae of Sup-* *pression of* *Urine.* *suria*, the other *Stranguria*, and the third *Ischuria*.

When a Patient does not void his Urine without Difficulty, *Of the Dy-* this Indisposition is called *Dysuria*; which Word is derived *suria.* from *Dys*, which signifies difficult; and *Ouron*, Urine, by reason its Passage is accompanied with Difficulty and Pain.

When the Patient pisses only drop by drop, this Disease is *Of the* called *Stranguria* or *Strangury*, from *Stranx*, a Drop, and *Ou-* *Strangury.* *ron*, Urine, because no more than a Drop comes at once; whence this Distemper is also called the Piss-dropping.

If the Urine doth not pass at all, 'tis an *Ischuria*, a Word *Of the Is-* derived from *Ischein*, to retain; and *Ouron*, Urine; it being a *churia.* total Retention and intire Suppression of Urine.

There are two sorts of Suppression of Urine; the one, when *Another* that Excrement is contained in the Bladder, and cannot issue *Distinction* out; and the other, when 'tis stopped above the Blad- *of the Sup-* *pression of* *Urine.* der.

*Of the Ob-
stacles to
Excretion
of the Urine
which form
themselves
in the Blad-
der.*

We find five or six Causes which obstruct the Passage of the Urine out of the Bladder: First, when some Stone is placed at the Mouth of the *Urethra*, and stops that Passage; when it is to be pushed back with a Wax-candle, or a Probe, or displaced even by Extraction, if after several times removing the Patient, it still continues in the same place. Secondly, When the *Urethra* or urinary Passage is sunk, and as it were shrivel'd, as it happens to old Men, when the Erection of their Yard ceases: This is cured by hot and aromatic Fomentations which invigorate that Part. Thirdly, when an Inflammation happens to the Neck of the Bladder, or urinary Passage: In which Case such Medicaments are applied as assuage the Pain, and moderate the Ardency of the Blood. Fourthly, when 'tis occasioned by a sluggish thick Flegm contained in the Bladder; that nituitous Matter is drawn out by the Probe. Fifthly, when the Bladder being too full, the Fibres, which extended to an excessive Degree, lose their springy Motion, and are no longer able, by Compression, to force out the Urine; this is what frequently happens to Children, after being long without pissing; In this Case the *Pubes* is to be rubbed with Oils, as that of Capers; and the Artist is also to have recourse to his Probe. To these is added a sixth Cause of the Retention of the Urine, which is said to be a *Carnosity*, which is to be consumed; but I am not thoroughly convinced that there is any such thing.

*The Causes
which hin-
der the U-
rine passing
into the
Bladder.*

We find two Causes which hinder the Passage of the Urine into the Bladder: The first is a malignant and continual Fever, which, by its excessive Heat, so enflames the Parts, and especially the Kidneys, whose Pores are too closely locked up, or the Fibres too much relaxed, or whose Ferments are ill disposed for the Separation of the excrementitious Serosity of the Blood; and the second is, when the Urine is detained above the Bladder by Stones, either in the Reins or Ureters, which stop its Passage.

*Signs to
distinguish
whether the
Urine be
retained in,
or above
the Bladder.*

We discover the Suppression of Urine to be in the Bladder, by the Tumour, Pain and Tension which the Patient is sensible of in the Region of the *Pubes*; on the contrary, if this Liquor is suppressed above the Bladder, that Region is sunk in, soft, hollow and free from Pain; and when the Urine cannot be separated from the Blood, it becomes too watery, the Patient's Strength diminishes daily, and he dies.

*A Prog-
nostic with
regard to
these Sup-
pressions.*

The Judgment which the Chirurgion ought to pass on these suppressions of Urine, is, that those which detain in the Urine in the Bladder by what Cause soever, may be cured; but those who keep it above the Bladder are very often mortal, not affording any hope but from some Crisis which 'tis proper only for Nature to produce by an extraordinary Effort. Suppression of Urine in the Bladder is cured either by Medicaments, or Instruments.

The Medicaments are *Baths, Embrocations, Plaisters, Uncti- Medica-
ons, Humectations, Fomentations, &c.* applied to the *Yard, ments used.*
Rubes or *Perinaum*, or introduced into the Bladder through the
Yard. I shall not describe them here, a thousand Authors
have treated of them.

The Cure, by the assistance of Instrument, is twofold, ei- *Two sorts*
ther Palliative or Curative. That call'd Palliative, is when *of Cures.*
we don't endeavour to remove the Cause which continually
remains, though we stop or relieve the Symptom; as when
we only trust back the Stone to give Passage to the Urine, it
being sometimes possible for a Stone to continue forty Years
in the Bladder. The Curative, is when we remove both the
Disease and the Cause; as when the obstructive Humour and
the Urine issue out by the Instrument which is introduced into
the Organ.

This Operation is call'd *Catheterismus*, from the Instrument *Of Cathe-*
by which 'tis perform'd, which is term'd in Greek a *Catheter, terism.*
being deriv'd from *Cata*, within, and *Ein*, to send. 'Tis an
excavated and carve Probe, which serves to draw the Urine
out of the Bladder, and discover the Diseases of that Organ.
The French call it *Algalie*, an *Arabick* word commonly im-
porting a Probe.

There are of these Probes adapted to both Sexes: That *Variety of*
mark'd A is one of the largest sort for Men; the other B, is *Probes.*
lesser, in order to be used to Children; and the third C, is
for Women. You may observe that those for Men are very
much bent to accommodate them to the shape of the *Urethra*,
and the neck of the Bladder; and the other appointed for
Women is almost strait and shorter, because their *Urethra* or
Urinary Passage is straiter and shorter than that of Men. The
Chirurgeon must be provided with both these Sorts. He dips
the end in the Oil in the small Vessel D, that it may enter with
the greater facility.

The Antients made these sorts of Probes of Horn, they were *Their Mat-*
afterwards of Copper, but are all at present of Silver. They *ter, Size*
must be hollow quite through, and their Cavity provided with *and Figure.*
a Pin or Stiletto: They must not be pierc'd at their Extre-
mity which is introduc'd into the Bladder, but on the sides of
that end, because that in touching the Membranes of the
Bladder by that end, if it was bor'd, they would stop it, and
the Urine could not enter into the Probe; but being perfo-
rated on the side, though the Probe should even touch the
Bladder, the Urine may easily escape. They ought not to be
so weak, as to be in danger of bending; nor too big, for fear
of occasioning Pain; they must be even and well polish'd, to
enter with the greater ease.

Though I here shew you but three Probes, the Chirurgeon
may yet provide himself with them of several sizes, small ones
for little Children, midling ones for Youths, and large ones
for

for Men; but two sorts are sufficient for Women, one small one for Girls, and a larger for those of a more advanced Age.

Here we should treat of the Introduction of the Probe into the Bladder, in order to draw off the Urine; but there being no difference betwixt that and the Introduction of that Instrument to search whether there be any Stone, you need only remember what has been said one that Head.

What to be done after the Introduction of the Probe.

The Probe being introduced into the Bladder, the Pin or *Stiletto* must be drawn out, in order to make way for the Urine to run through the Canal of the Probe. All the Urine being thus drawn off, the Probe must be gently drawn out, and this Operation renew'd as often as the Patient wants to make Water, as long as the Suppression continues.

OF THE PUNCTION OF THE PERITONÆUM.

'Tis not always in the Chirurgeon's power to draw off the Urine by the Probe, because there are frequently Obstacles to the Introduction of that Instrument into the Bladder; and how dextrous soever he may be, he cannot get it into that Organ. *Lithotomists* themselves, notwithstanding their daily Practice of probing, have acknowledged their inability of performing it in some Subjects, by reason of the insurmountable hindrances which they find.

Obstacles which present.

These hindrances are either an Inflammation in the Neck of the Bladder and the *Prostata*, which so tumifies those Parts that nothing can pass through the *Urethra*; or the Callosities of that Passage, caused by the cicatrizing of Ulcers, which so contract that Conduit, that 'tis impossible for the Probe to pass, whatever Efforts are made to force it in; or, lastly, some Tumours, or membranous Productions which stop the *Urethra*, as it happens to some old Men, in whom the Passage so shrinks up, that neither the Urine nor Probe can open any Passage.

Necessity of Punction.

But, notwithstanding all this, the Patient must not be left to perish, and nothing but a Punction of the *Perinaum* can save his Life; for he must of necessity void his Urine or dye:

Method of performing that Operation.

'Tis then the Chirurgeon's part to advertise the Patient's Relations and Friends, and give them such a Prognostication as the nature of the Indisposition requires. After which, having disposed the *Apparatus*, he must place the Patient on the edge of the Bed and lay him on his Back, his two Thighs wide extended, and his Knees bent, so that his Heels touch his Buttocks, causing the Legs to be held in this Posture by two Servants, and the *Scrotum* to be raised up by another: Then the Operator taking an Instrument made on purpose for that end, shaped like a Lancet, narrow, sharp pointed, and about four or five inches long, such a one as is expressed by the Figure E, he thrusts it directly into the Bladder, beginning the Punction on the Buttock's Suture, in the same place where the Incision is usually made in *Lithotomy*; and he will discover what is in the Bladder, by what issues out of the sides of the Instrument;

Instrument; before he withdraws which, he must gently thrust the strait Probe F along the side of it into the Bladder. This Probe must be guided with the left hand, and the Instrument drawn out with the right, with which the Operator next takes a Silver Pipe G of four Inches long, with two Rings at its head, thro' which is run the Ribban H of an Ell and half long. The hind end of the Probe is then pass'd into the fore-end of the Pipe, which serves to conduct it into the Bladder; for if the Instrument which made the Puncture shou'd be drawn out before the introduction of the Probe, the Chirurgion would run a risque of wholly losing his way when he endeavours to thrust in the Pipe, wherefore the Probe is absolutely necessary by way of Precaution. After the Urine is all voided by the Pipe, we stop the exterior Aperture of that Instrument with a small Linnen Tent I, and leave it in the Wound. The Ribban run thro' the two Rings of the Pipe serves to fasten it to a Girdle, to prevent its slipping out of the Wound. Whenever the Patient would Urine, the Tent must be taken out, and the Bladder thus emptied as often as fill'd.

Tent to stop the Pipe and open it at pleasure.

Of three Accidents which I have pointed out as those which require this Operation of Punction, there is but one only which we can hope to Cure, which is the Inflammation of the Neck of the Bladder and the *Prostata*; for the Operation being made, endeavours are us'd to Cure the Inflammation, by Blood-lettings, Fomentations, Liniments, and other anodine Applications: When 'tis moderated, and the Swelling asswag'd, or come to suppuration, as it sometimes does, the Tent must be taken out, bind up the Wound tight, and in this case we shall find the Urine returning to its ordinary course, issue out at the Yard. But when the Callosities in the uninary Passage, or a sinking occasion'd by Age, have oblig'd the performance of this Punction, the Patient must resolve to wear this Pipe the rest of his Life. In this case, instead of a Linnen Tent, a Silver Screw-Stopple must be used, which will shut it so close that the Urine will never drain out, and the Patient is left in condition to follow his Affairs, with this Inconvenience only, that he cannot make Water without unstopping his Pipe, as I have seen several who wore them 'till their Death.

One of the Causes of this Indisposition curable.

Incurable Causes.

This Operation, tho' it consists in no more than a single Punction, yet requires the Chirurgion's anatomical Knowledge of the disposition of the Places where he makes it, as well in order to guide his Lancet directly into the Bladder, as to know what Parts it may hurt in its passage; he ought also to see it perform'd several times before he attempts it himself, for it will affright a Chirurgion not very well vers'd in Anatomy, or which has never seen it done: But those who are Masters of the Practice of it, will find it one of the easiest in Chirurgery.

New way of
practising
this Puncti-
on.

* Brother
James.

Advanta-
ges of this
Method.

This is the Method hitherto observ'd in the Punction of the *Perinaum*; but that which * *Frere Jacques* has furnish'd us with in order to extract the Stone out of the Bladder, of which I shall presently give you the History, has given me occasion to think that this Punction might more securely be made at that part of the Bladder where the Incision is usually made for the Stone, that is in the body it self of that Organ near its Neck; so that the Lancet need not be plung'd into the *Urethra*, and forc'd to pass thro' the Neck of the Bladder, except in case of an Inflammation in which 'tis so tumefied that nothing can come out, and one is in danger to cut the Neck with the Instrument to make a Passage; which may redouble the Accidents, and frustrate the Patient of the expected fruit of Operation: But if we thrust in this Instrument about a Finger's breadth from the *Perinaum*, and pierce the body of the Bladder near its Neck, I believe the Operation would be more secure and less painful, since not piercing the *Urethra*, we should not hurt the Neck of the Bladder, and the Inflammation being diminish'd or abated, the Urine would return to its natural Channel at our taking out the Pipe and closing the Wound, which is to be Dress'd according to the manner, and will as easily heal as others; for we know at this time of day that Wounds in the Bladder are not mortal, as was formerly believ'd, provided withal that they are not of a too wide extent, and that 'tis possible for some neighbouring Vessel to stick to them, and this Operation ought to be call'd *Cystitomia*, from its effectual opening of the urinary Purse.

OF THE WHEN the Finger or Probe has convinc'd us that there is a
EXTRAC- Stone in the Bladder, we are necessitated to proceed to Opera-
TION OF tion: 'Tis then the Chirurgion's part to discourse the Patient
THE like a Man of Honour, if he desires to distinguish himself from
STONE. those Mountebanks and Vagabonds, whose Ignorance and Po-
verty put them upon a thousand base Practices, and the boast-
ing a thousand Impossures; his Prognostic must be founded on
the Hopes and Fears suggested by the true State of his Patient's
Case, carefully avoiding the promising more than he is able to
perform, as some do who practise the Operation of which we
are treating.

To discharge the part of an exact and methodical Practitioner in the performance of this Operation, the Chirurgion ought more especially to have his Eye on three things, and determine what ought to be done, *before, during, and after the Operation.*

Circum- The Particulars necessary before the Operation are reduc'd
stances to to five Circumstances; the first the Choice of the Time, the second
be observ'd the Preparation of the Patient by some general Remedies, the
before the third is to resolve whether 'tis to be perform'd by the lesser or
Operation. greater *Apparatus*, the fourth to prepare the respective *Appa-
ratus*, and the fifth to place the Patient in a proper posture.

In order to the performance of all Operations, there are *Two Seasons* two establish'd times, the one of Necessity, which will not admit of being deferr'd; and the other of Choice, which allows the fixing on that which is most proper. The Ancients gave the preference to the second with regard to *Lithotomy*, and have order'd us not to perform it unless in the Spring and Autumn: But 'tis a mistake to believe that it ought never to be done but in these two Seasons, for provided that the excessive hot and the too rigid cold Seasons are avoided, I am of Opinion that this Operation may be perform'd in the remaining Seasons of the Year: 'Tis Cruelty to see the Patients suffer what is in our Power to relieve speedily. I saw Monsieur de *Corneille*, Gentleman in Ordinary to the King, die whilst waiting for the Spring, when he might have been cur'd if he had been Cut when necessity requir'd it. 'Tis with this Operation, as with regard to Mineral Waters, which have hitherto been thought unfit to be taken at any other time than in Spring and Autumn, and believ'd to be Mortal at any other Season: But several illustrious Persons have remov'd this Prejudice, by recovering by their means their Health at all times of the Year, and the most celebrated Physicians, Monsieur *Fagon*, amongst others, prescribe them to their Patients almost as frequently in Winter and Summer, as in the more moderate Seasons.

The Preparation of the Patient before the Operation, is a necessary Precaution. He must be bled once or twice pursuant to his Strength, he must take several Clysters, and Purge twice if replete with Humours, and as often as Physicians shall judge proper; for to them belongs the Prescription of general Remedies, they frequently assisting the Chirurgeons with their Advice and Presence in these Operations: The success of which several times depends on a due Preparation of the Patient. Nor must the Chirurgeon perform this Operation on the day of, or the day after Purgation, for fear lest part of the Physick issuing out during the Section, very much interrupt it.

Before *John de Romanis*, a Physician of *Cremona*, who was the first Inventer of the Extraction of the Stone by the Great Apparatus, and who practis'd it at *Rome* in the Year 1520, this Operation was always perform'd by the Lesser Apparatus; but at present both ways being practis'd, the Chirurgeon must determine his Choice before he goes about it, and resolve which of them he intends to make use of, in order to make the necessary Preparations for either of them.

The Lesser Apparatus requires no more than two Instruments, which are an Incision-Knife to make Incision on the Stone, and a Crochet to draw out the exotic Body when discovered; but the other Method requiring many more, is therefore call'd the Greater Apparatus.

They are both spread and shewn on the Table at the head of this Demonstration, whither you ought to guide your Eyes. That

Convenience of the Chirurgeon's Purse. That the Chirurgeon may the more commodiously perform the Operation, he ought to have a Purse or Pocket fasten'd before him, in which he should put all his Instruments except the Incision-Knife, which he must cause a Servant to hold and give him when Time and Place serve. Two Advantages result from the use of this Pocket, one of which is, that it conceals from the Patient's Eyes the number of Instruments which naturally terrifies him; and the other, that the Operator finds them under his Hand whenever he wants them, without being oblig'd to ask for them.

Posture of the Patient. The *Lythotomist* having then tied an Apron about him, over that fastens his Purse, and having drawn on his Arms two wide Linnen-Sleeves, next thinks of placing his Patient. In the Hospitals there is a Chair provided expressly for that purpose, but in private Houses we make use of a high Table, that the Chirurgeon not being oblig'd to stoop, may carry on his Work more at his Ease. The Patient is plac'd on the edge of the Table, after providing it with a Matrasse, under which a Chair is turn'd wrong end upwards, in order to form an inclining plain, on which the Patient must be lain backwards: Next with two Scarves or Sashes, each of five or six Ells long, and two or three Fingers breadth broad, he is bound in such manner as to disenable him from interrupting the Operation by any motion, he not being then able to stir. Two Servants take the Sashes, which folding in two, they place the middle behind the Patient's Neck, and then descending and rolling them in cross Squares around each Arm, the Thighs being fix'd against the Belly, and the Heels against the Buttocks, the Arm, Thigh and Leg of each Side are so bound together, that the Chirurgeon is absolute Master of the Patient. He must have five Servants, two who on the right and left are to hold the Patient's Legs and Thighs, and draw them as wide as possible; whilst the third mounting on the Table behind the Patient, presses with his two Hands on his Shoulders; the fourth is posted on his right Hand, in order to raise up the Purse of the Testicles with one Hand, and hold them with the other whilst the Incision is made, the Probe being engaged in the *Urethra* as far as the Belly; and the sixth is to present the Incision-Knife to the Operator, receive it from him when the Wound is made, and afterwards furnish him with what he wants. On the Table must be plac'd a Basin or Pot full of warm Water to wash the Instruments, which become too bloody during the Operation, and care must be taken to set a Plate with Oil of Olives, to Oil the Probes before using them, or the Operator's Fingers before introducing them into the *Anus*. Thus you see what is to be observed before the Operation.

All things thus in readiness, the Operator must go to Work as fast as he can, because I suppose him resolved on the manner

ner of the Operation; since 'tis possible to extract the Stone out of the Bladder by either the lesser or larger Apparatus as I have hinted. I shall now demonstrate both these Methods that you may judge which is the best; for I am not willing to take any notice of the Method practis'd by some *Jews* and *Arabians*, of extracting the Stone without Incision, by the force of Inflation, because I believe it impossible, if the Stone be allow'd to exceed only the bigness of a small Olive.

Arabian's manner of extracting the Stone.

The small or lesser Apparatus deriv'd its Name from the very few Instruments which suffice to its practice; namely, only an Incision-Knife and Crotchet: But after the Chirurgeon has once try'd the great Apparatus, he will never cut any besides Children by the lesser. In this Performance there is no need

Of the small Apparatus us'd only to Children.

of so many Servants, no more than two are requir'd; one to hold the Child, and the other to raise up the Yard and the Scrotum. The first ought to be a strong Man, who being seated in a sufficiently high Chair, places a Pillow under him, and hangs before him a Cloth down to the Ground, lest his Legs should be blooded: Thus posted and provided, he takes the Child on his Knees, and having ran his Hands under its Knees, he lays hold of his two Arms, which he extends in such manner as to render the posture of the Child very commodious for Section. The second Servant raises the Purse of the Testicles with his two Hands; then the Operator having Oil'd the fore and middle Fingers of his left Hand, introduces them gently into, and thrusts them far into the *Anus*; the Palm of that Hand being turn'd upwards, he then feels the Stone in the Bladder, and with his two Fingers brings it towards the Neck of that Organ, and pushing it as far outwards as he is able, causes it to produce an apparent Tumour, on which with the Incision-Knife *L* he makes his Incision proportionable to the size of the Stone. He ought not to be apprehensive of resting the edge of his Knife against the Stone for fear of blunting it, but on the contrary he must cut whatever he meets of the Tumour clear thro' to the Stone, without sparing even the neck of the Bladder, that no small Fibres may remain to detain the Body. The Incision made, the Operator returns the Incision-Knife to the Attendant, and with the same Hand takes the Crotchet *V*, which he slides behind the Stone in order to push it out, in which he is aided by his two Fingers in the Fundament. The Stone then being taken out without breaking, the *Lithotomist* must examine whether any more are yet left behind, that he may draw them out the same way, or with the Stone-Forceps, if not otherwise to be done.

What Incision to be made.

Use of the Crotchet.

Search to be made after the Extraction.

This Operation, tho' easie to be perform'd, is not approv'd by all *Lithotomists*. They find it frequently attended with Circumstances which render it very dolorous: For instance, if the Stone be gravelly, rough or uneven, and has several acute

Inconveni-
encies of
the Lesser
Appara-
tus.

Angles, the pushing it forwards to draw it towards the *Perinaum*, puts the Patient to horrible Pains, from its Points or Inequalities, pricking the Bladder, which is a very sensible Organ. They add, that being rough, the Incision over its Body is not to be perform'd without difficulty, which confounds the Operator, and takes up a very long time to perform it as exactly as is requisite, to make way for the Stone to come out easily. These are the Inconveniencies which make several Operators prefer the Grand Apparatus to the Lesser.

Of the
grand Ap-
paratus
most in use.

The second way of Cutting is then call'd the Grand or Greater Apparatus, from the great number of Instruments requisite to put it in execution; 'tis that which is most frequently practis'd, and which to this present time has been concluded the best. The Patient being plac'd as already mention'd,

and held fast by the Scarves and Servants diversly posted, the Operator takes a Probe K, excavated like a Gutter on the back of its curvure, and with regard to its dimensions proportion'd to the Subject; and after having dipt it in Oil, he introduces it into the Yard and thrusts it into the Bladder. With the end of this Instrument he searches for the Stone before Incision, in order to be again assur'd that there really is one; for 'tis not impossible that he may have been deceiv'd in his first Probing, wherefore if he does not find it in this second, he ought not to proceed any farther: But on feeling that exotic Body at

Of the Im-
pulse of the
excavated
Probe, in-
troduc'd in-
to the Neck
of the Blad-
der.

the end of his Probe, he causes it to be held by a Servant, who thrusts its head downwards, that the curve Part of this Instrument, which is first introduc'd, shoving outwards the interior Extremity of the *Urethra*, may the better discover to the Operator the proper place for Section. The same Servant with the other Hand holds up the *Scrotum*, and the Chirurgion with the Thumb and Fore-finger of the Left-hand, extending the Skin of the *Perinaum*, takes in his Right-hand the Incision-Knife L, ready mounted, which is presented to him by one of his Assistants on the Right-hand, who ought to remember to give it to him by the Handle, and not by the Point, as he did to whom Monsieur *Marechal* gave it to hold when he cut the Duke of *Grammont*, and who tendring him the Knife with the Point towards him, wounded his Hand, which had like to have interrupted the Operation. The Operator next, with all the assurance of which he is capable, makes the Incision in the Suture of the *Perinaum*, which proceeds from the middle of the *Scrotum* to the *Anus*, he opens the *Teguments* and the *Urethra*, advancing his Instrument to the Groove of the Probe, which serves him as a Guide or Stay to prevent his cutting more than he intends. The length of this Incision must be from two to four Fingers breadth, pursuant to the size of the Stone. There are some Lithotomists who themselves hold the Probe in their Left-hand whilst they make the Incision with their Right; but this depends on the Habit

Advice
how the
Knife is to
be present-
ed.

Length of
the Inci-
sion.

which

which they have contracted, or the Masters who instructed them. The Incision is no sooner made, than the Incision-Knife is immediately return'd to the same Servant who gave it.

The Lithotomists formerly made use of two Guides, shap'd like small Swords, of which the first, M, had a Bill which continu'd thro' almost its whole length, and which easily slid along the Groove of the Probe into the Bladder; and the second, N, had a Groove at its end, which serv'd to conduct it over the first into the same Organ, and betwixt these two Guides was introduc'd the Forceps; but almost all Operators have substituted in their place a Gorgeret, O, which they have found much more convenient. The Lithotomist searches for it in his Purse or Pouch with his Right-hand, and with the Left he takes the head of the Probe from the Assistant to whom he had intrusted it; then placing the Bill which is at the end of the Gorgeret into the Groove of the Probe, he by that means guides it into the Bladder, facilitating the entrance of this Engine by separating the head of the Probe from the Belly with his Left-hand, which makes way for the Probe and Gorgeret to enter together into the Bladder.

Of the Conductors like Swords.

Of the Gorgeret which is prefer'd to them.

Some having made an Incision of a moderate length, and withdrawn the Probe, make use of the Dilator R, to enlarge the Wound; pretending that a Wound widen'd by the Dilator heals sooner than a very long Incision; because that according to them the Fibres of the Neck of the Bladder are not cut, but only separated by the Dilator: But yet this Practice is not universally approv'd; some prefer a larger Incision before the use of the Dilator; believing that it may occasion a Fluxion about the Bladder, and produce several dolorous Accidents; and really during the space of time which the Operator takes up to make the two Extensions, one in breadth, and the other in length with this Instrument, the Patient is always heard to redouble his Groans and Cries; which prove the excessive Pains which he then endures, wherefore we advise the least use of it possible. The Probe being withdrawn with the Left-Hand, the Operator takes the Gorgeret in that Hand, and with the Right takes the Forceps P out of his Pouch. He generally makes use of the strait one, which he introduces shut into the Bladder by means of the excavated Groove along the Gorgeret. Immediately after this introduction, with his Left-hand he withdraws the Gorgeret, which he returns into his Pouch, and with the Forceps shut searches for the Stone on all sides of the Bladder; he ought not to open them during the search, because in so doing he might frequently chance to wound the Bladder, or pinch it in re-shutting them. When the Stone is felt at the end of the Forceps, the Operator applying both Hands to the Instrument, gently opens it, and endeavours to charge it with the Stone, the size

Of the Dilator and the Accidents which accompany its use.

How the Stone-Forceps to be us'd when introduc'd.

How to lay hold on the Stone.

of which he discovers by the distance betwixt the one and the other Ring of that Instrument; and if it seem too large to be drawn out by the Incision already made, he turns the Stone loose into the Bladder, and endeavours to take it up another way; because it frequently happens that a Stone being shap'd like an Egg, that is oblong, is taken first up by its longest part and the second time by its narrowest, when its Extraction is much more easy; whilst on the contrary, shou'd the Lithotomist obstinately persist in drawing out that exotic Body when he has grasp'd it longways, he would put the Patient to the suffering of Martyrdom, and that some times in vain. There are tender gravelly Stones which crumble under the Forceps: When this happens the Bits must be taken out as well as the Chirurgeon can; there are some Stones so big that 'tis impossible to draw them out, in which case they are left there, rather than kill the Patient in taking them out. If there happen to be two Stones, which we discover by the Knob T, at the end of the Curette or Scoop S, after the first is drawn out the Forceps is again thrust into the Bladder, and takes it up as it did the former: If there happen to be more, as we sometimes find ten or twelve, the Forceps is to be introduc'd into the Bladder as often as any are left to be taken out. When the Stone is lodg'd on the right or left side of the Bladder, and we cannot come at it with the strait Forceps, the curve Ones Q are to be us'd; with them the Operator may take them up in whatsoever part of the Bladder they are lodg'd. There are flinty Stones, from the Superficies of which fall off some Fragments in taking them up with the Forceps; there are gravelly Stones which crumble under the Forceps, and there are frequently at the bottom of the Bladder a Sand and Gravel, which are necessary to be emptied after the Extraction of the Stone. In these occasions we make use of the Curette or Scoop S, with which we empty whatever is at the bottom of the Bladder, the Operation not being perfected so long as any exotic Body remains there. Having well cleansed the Bladder, we take the small Pipe X, the end of which dipt into Oil of Roses, is softly introduc'd into that Purse, in order to be left there for several Days, according as Necessity requires; 'tis fasten'd to a Girdle by a String Y, run thro' the two Rings which are at its Head, that it may not slip out of the Wound.

What to be done when the Stone breaks, when too big, or when others are left behind.

When the Scoop to be us'd.

Of the curing the Patient after the Extraction of the Stone.

After having specified what is to be done before, and during the Operation, we are next to finish by describing what is requisite after its Performance. The small Pipe being fixed and secured, which is that which finishes the Operation; we lay on the Wound a Quadrangular and a very thick Bolster, which must be held by a Servant, in order to prevent the Air entering the Bladder, before we dress the Patient. In order to whose Preparation, he must be immediately loosen'd by taking off the two Scaryes, when by two Persons he is carried to his Bed,

Bed, which must be provided with Sheets several times doubled, to prevent the Blood or Urine, which may drain through the first Days, spoiling the Bed. If before the Operation, neither the Band, called a Collar, P, nor that called a double P, marked 9, hath been applied, it is put on before we dress the Patient; when drawing nearer the Apparatus, requisite for dressing the Wound, we take off the Bolster, and lay on the Incision the two Pledgets, X and Z, overspread with Astringents, and then the tail'd Plaister 1, and above that the large Bolster 2; immediately after which we irrigate with Oil of Roses, which stands ready in the small Plate, 3, the Scrotum, Yard, and whole inferior Venter; we raise up the Purse of the Testicles with a long Bolster, 4, which is called a Truss, and the Belly we cover with what we call a Belly-piece, 5. All these Bolsters are dip'd in *Oxycratum*, i. e. Vinegar and Water, which is in the Earthen Plate, 6, and fastened by the Bandage P, marked 9; the two Branches of which cross each other on the Wound, and are turned upwards along the Groins, in order to fasten them to the circular Bandage, which surrounds the Body. We bind the two Legs together with a small Band, call'd the Garter, 7, that they may not, by straddling, re-open the Wound, and clap a Pillow under the Knees, in order to keep them a little elevated; next which we end with giving the Patient some Restorative, or Liquor, which may a little renew his decay'd Strength. I shall not mention the supervening Accidents of this Operation, nor of the dressing and Methods to be observed, in order to its Cure; to particularize all these Circumstances, would require a whole Volume; I refer you to Monsieur *Tolet's* Book, which has very well handed this Subject.

Monsieur *Thevenin*, a Member of the Company of Chirurgeons at *Paris*, and a Chirurgeon in Ordinary to the King of *France*, informs us, that there are some Cases in which we ought not to attempt the Extraction of the Stone out of the Bladder; for Instance, when we believe the Stone too large, or the Patient so old and weak, that he is not able to undergo the Operation, nor to endure the Violence of those Symptoms which will attend an Incision so large as the Bulk of the Stone will require; but if that exotic Body, falling on the Neck of the Bladder, stops that Conduit, and frequently occasions a Suppression of Urine, we are then obliged to shove it back with the Probe, in order to make way for the Passage of that Excrement; and it being possible that the frequent thrusting in and drawing out of the Probe, may fret and perhaps gangreen the urinary Passage, he proposes the following Operation: The Patient must be placed in the same Posture as in the great Apparatus, then the Chirurgeon must introduce into the Bladder an excavated curve Probe, and on the crooked part of the Instrument make the same sort of Incision, as tho' he designed

The manner of binding and dressing him during the first Days after the Operation.

In what Cases the Extraction of the Stone is not to be attempted. Means to give the Patient Ease on these Occasions.

A Puss, which, by repulsing the Stone, makes way for the Passage of the Urine.

designed the Extraction of the Stone, with this Difference only, that the Wound must be much less: Immediately afterwards he introduces a *Stiletto* into the Bladder, sliding it along the Gutter of the Probe; this *Stiletto* serves to convey thither a Silver Pipe, about four Fingers breadth long; by passing it through the Cavity of this Tube, the *Stiletto* is next withdrawn, and we fasten the Pipe to a Girdle by a Ribban run through the two Rings at its Head. This Tube is left to continue always in the Incision, and it hinders the Stone presenting it self to the Neck of the Bladder; and, floating on one side and the other, gives the Patient an easier Life, and frees him, in some Measure, from Pain, 'till he has recovered sufficient Strength to undergo the cutting; but sometimes this Pipe so little incommodes him, that he chuses rather to bear it than expose himself to the Operation, of which he may dye. This small Pipe must be made to screw at the top, in order to retain and void the Urine at Pleasure. This Pipe may also serve to make Injections into the Bladder in several Indispositions to which that Organ is liable.

A better way of placing the Pipe.

This is the way of performing the Operation which Monsieur *Thevenin* teaches us; according to which Method, the Patient must necessarily void his Urine through the small Pipe, that filling the Neck of the Bladder; for which Reason I should advise the Introduction of a Pipe of the same shape with that which I use in the Punction of the *Perinaum*, I would say, into the Body of the Bladder at its Neck: There is no ill Consequence to be fear'd from piercing it in this place, and the Patient would enjoy both the Advantages which he would find by Mr. *Thevenin's* Method, which are to void his Urine whenever he pleases, and to hinder the Stone either falling into, or pressing on the Neck of the Bladder. But another Advantage resulting from the Method which I propose, is, that the Neck of the Bladder being free, and the Stone sustained by the end of the Pipe, which ought to enter the Cavity of that Organ above a Finger's breadth, the Urine will issue out by the *Urethra*, its ordinary Passage; so that the Patient will be subject to no other Inconveniency, than the sole one of being obliged to keep in this Pipe, without being forced to open it whenever he would discharge the Bladder of its Load of Urine, instead of unstopping it as many times as it serves for an urinary Passage.

Of the HIGH APPARATUS.

The third way of extracting the Stone, is called the *High Apparatus*; from its drawing out the Stone at the upper part of the Bladder; which Method is at present grown out of use. *Nicholas Franco*, a Chirurgion of *Lauzane*, was the first that ever practised it; which he did on a Child, whose Stone was so large, that he could not extract it by the *Grand Apparatus*. He informs us, that in order to perform this Operation, we must cause a Servant to introduce two Fingers into the *Anus* of the Patient, with which, instead of pushing the Stone to
the

the Neck of the Bladder, as in the *lesser Apparatus*, he must, Of the
on the contrary, thrust it towards the *Fund*, or bottom of that place of the
Organ, then make an Incision at the bottom of the *Hypogastri-lowet Ven-*
um, directly above the *Os-pubis*, and a little on one side of the *ter to be*
Linea-alba, or *white Line*: The *Muscles* being cut, we open opened, and
the Bladder at its *Fund*, which is naturally turned upwards; where the
then, with a *Crotchet*, we drive the Stone as in the *lesser Ap- Bladder is*
paratus. Though *Franco* tells us, that this Operation succeed- to be pier-
ed under his hands, he yet dissuades us from the Practice of ced.
it, without giving us any Reason for his so doing. We are *Success*
assured that *Monfieur Bonnet* frequently, and with good Suc- of this Me-
cess, performed this Operation at the *Hotel Dieu* at *Paris*; and thod.
also that *Monfieur * Petit* has seen him perform it: For my part, * Chief
I don't think it so hazardous as it may be imagined; but be- Chirurgion
lieve it, on the contrary, less dangerous than the *lesser and great of the Ho-*
Apparatus, and that the rather because we don't find any such tel Dieu.
thing as the Duplicature of the *Peritonæum*, in which the An-
cients placed the Bladder, as I have demonstrated in my *Ana-*
tomy already published; but the Bladder is placed without the
Peritonæum, in such manner that it may be open'd without
touching that Membrane, or opening the Cavity of the *lower*
Venter. The Method which may be observed, is as follows,

FIGURE

FIGURE XIV. *For the HIGH APPARATUS.*

IN order to the successful Performance of this Operation, we must introduce into the Bladder the excavated Probe, A, whose exterior Aperture must be large enough to admit the Entrance of the Syringe, B, with which the Bladder is to be filled with Water, of about the same degree of Warmth with that of Urine. We then make a Ligature about the Yard with the Band, C, that in syringing the Water don't escape out of the Bladder along the side of the Probe; and when by the quantity of the Injection, we conclude that the Bladder must be full, we draw out the Probe, and pull the Ligature of the Yard a little

little tighter, in order to press the *Urethra* sufficiently, to hinder the escaping of the Water through that passage. The Patient being seated on a Chair almost on his Buttocks, we make an Incision lengthways with the *Pen-knife D*, betwixt the two Heads of the strait, and the two pyramidal Muscles; after which, resting a Finger on the Fund of the Bladder, we feel the Fluctuation of the Water with which 'tis tumefied, when, with a large arm'd *Lancet E*, we must make a Puncture in that place of that Organ. We may easily discover when the Aperture is made in the Bladder by the Water which will run out, immediately after which, with the *Crochet F*, we may draw out the Stone, or else thrust a long and narrow pair of *Forceps, G*, into the Aperture through which the Water flows out, and having found the Stone in the Bladder, it will be easie to charge them with it, and draw it out at the Orifice. The Wound heals without pain, by reason that keeping the Patient in an almost erect posture in his Bed, the Urine which continually inclines to the Bladder, cannot reach the Wound, and hinder its closure, as in the two other ways of Operation; but besides always turns into its ordinary passage in order to run off. If the Incision made on the Belly should seem too large, and it be thought impossible to reunite it with ease, we may make use of a sitch with the *curve Needle H*, threaded with the *waxed Thread I*, and lay on the Wound the *Pledget K*, covered with *Arcaus's Balsam*, then the *Plaister L*, over that the *Bolster M*, and the *Roller or circular Bandage* made of a Napkin *N*, in order to end with the *scapulary Bandage O*, which will secure the whole *Apparatus*.

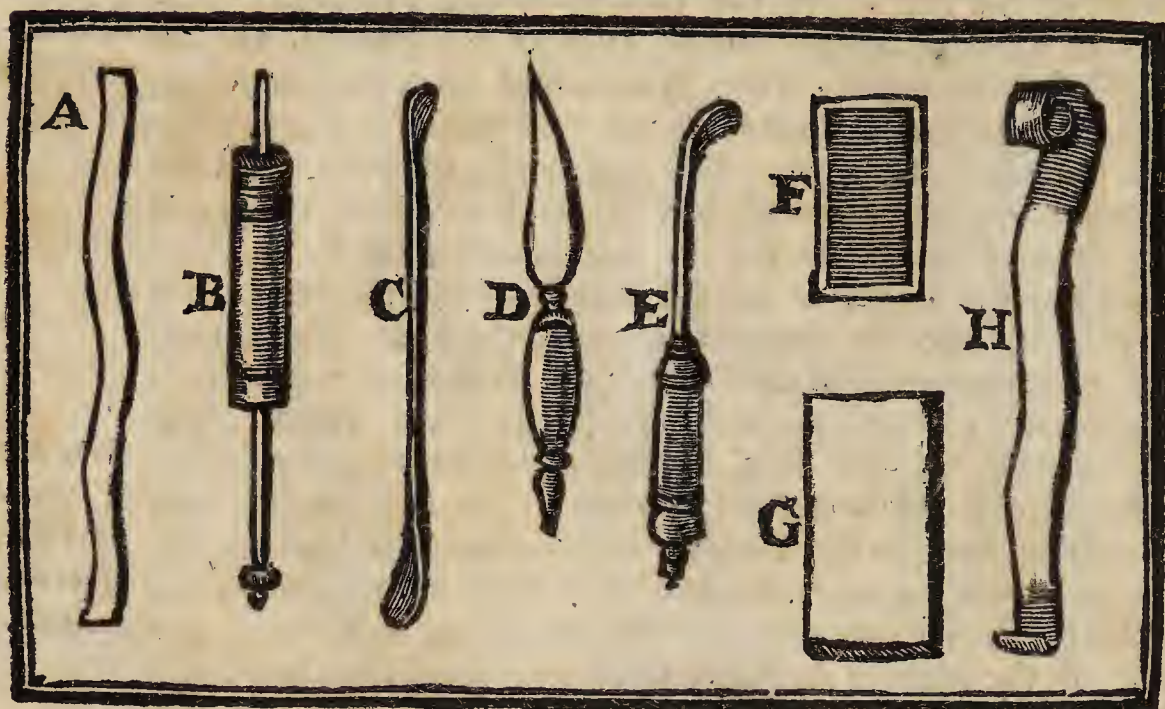
The place to which the Pen-knife is to be directed.

How the Wound to be treated after the Incision.

This manner of Section seems the best; but before we allow it the preference before the two others, it must be confirm'd by several Experiments, the first of which may be tried on some Criminal condemn'd to Death, and afflicted with the Stone. I am not the only Approver of this Operation; 'tis the Opinion of several Physicians and Chirurgeons, and especially of Monsieur *Fagon*, first Physician to the King, whose accurate Knowledge of Nature renders his Approbation of Importance.

Approbation of this Method.

FIGURE

FIGURE XV. *Figure of the STONE in the URETHRA.*

ALL Stones have their beginning in the Rein, and grow bigger in the Bladder; but don't all stay there, several of them following the stream of the Urine, run out of that Organ with it when they are yet but small: But when a Stone has acquired an indifferent bulk, and makes its way into the *Urethra*, it frequently stops there, and either by reason of its bigness or inequalities occasions such great Pains, that the Patient *Necessity of speedy help.* is forced to have recourse to a Chirurgeon, who, without any delay, is to endeavour to force it out, and that the rather, because it stopping the Passage, the Patient cannot empty his Bladder, which, if not speedily remedied, would prove of very fatal Consequence.

'Tis very easie to discover the place where the Stone is stopped, the Patient himself shews it; and though we touch it never so little, we feel a hardness caused by that exotick Body. *What is first to be tried.* The Chirurgeon ought first to endeavour with his Fingers to make it slide along the *Urethra*, in which he is assisted by the Urine, which pushes forward in order to drive it out. But when he cannot procure its proceeding forwards without violent Pains, with the small *Band A* he must bind the Yard beyond the Stone towards the *Pubes*, and inject into the remaining part of the passage of the Yard Oil of Olives with a small *Syringe B*. The *Ligature* prevents the Injection driving back the Stone, and its returning back the same way. *Use of the Oleaginous Injection.* This done, the Chirurgeon attempts to advance the Stone forwards, which is performed with much less pain, after the oiling

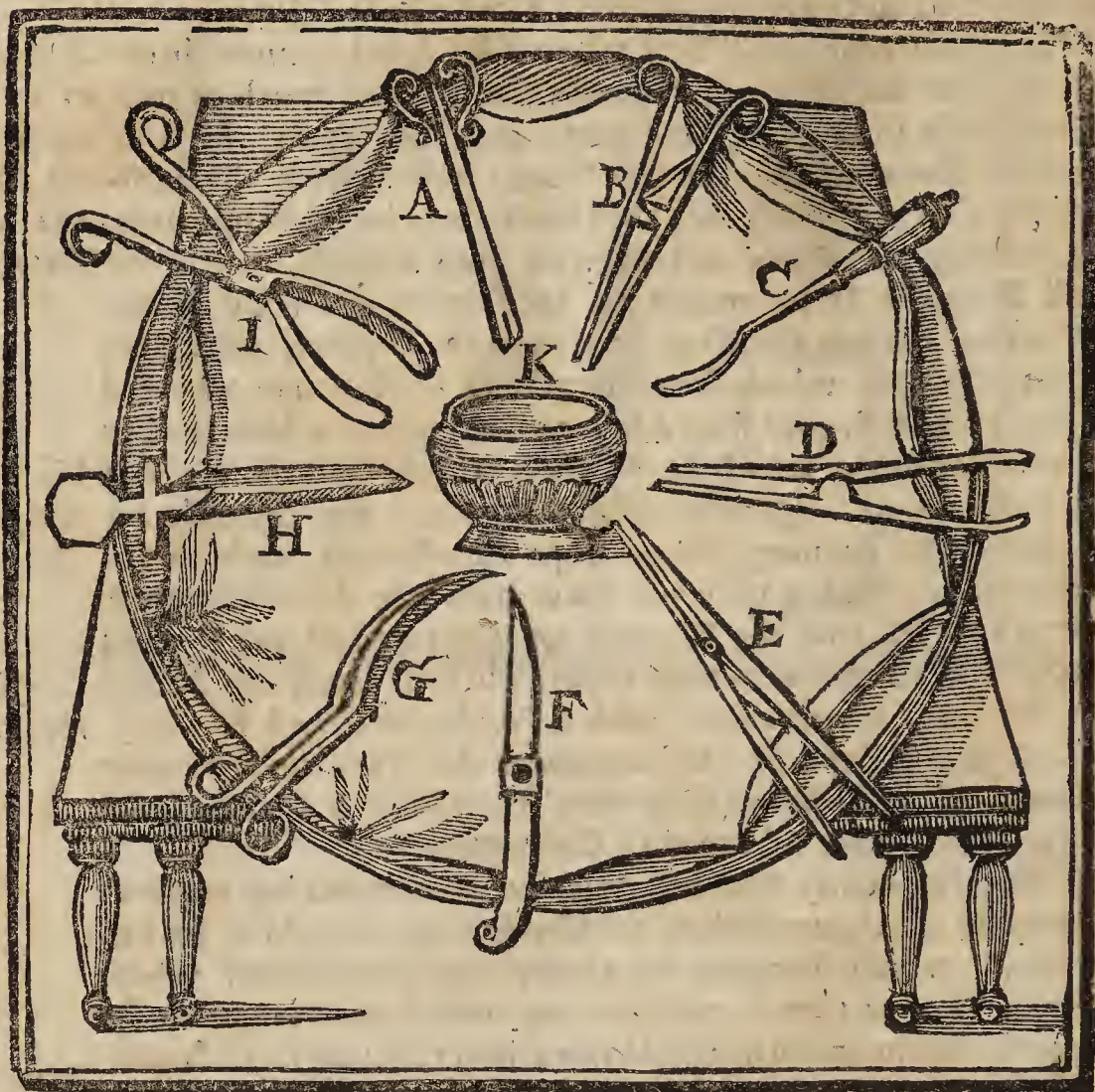
ing of the Passage: but if he finds it impracticable to get it out without more forcible means, he takes a small *Curette* or *Scoop* C, about four or five Inches long, which he dips in Oil in order to thrust it up the Yard, and slide its end on one side of and beyond the Stone, and by that means draw it out. This expedient frequently succeeds; but if it fails, the Chirurgeon must proceed to Operation without a moment's delay.

The Chirurgeon must then take off his first Ligature, in or- *Preparati-*
 der to draw the Skin which covers the Yard as much as pos- *on for the*
 sible towards the root of that part; and then apply the same *Incision of*
 Ligature above or beyond the Stone; when with the Left- *the Yard*
 hand turning the Yard, that the *Urethra* may be rais'd upwards, and the
 and holding the Stone fast betwixt two Fingers, with the *Urethra*.
 small Penknife D he makes an Incision on the body of the
 said Stone, cutting the Teguments and the *Urethra*, not across
 but lengthways; which done, he takes a small Scoop provided
 with a Handle E, and shap'd like an Ear-picker, which he slips
 under the Stone, which he by these means forces out. The *Use of the*
 Stone drawn out, he takes off the Ligature, and the Skin re- *Scoop*.
 turning to its ordinary Place, stops the Wound made in the
Urethra; the reason why we draw back the Skin before the
 Operation, is, that the Wounds on that part and the *Urethra*
 may not fall opposite to each other. These Wounds are dress'd *Dressing of*
 like the most simple ones, with a *Plaster of Ceruse* F, a Bol- *the Wound*.
 ster G, and a Band H, roll'd around the Yard in a circular
 manner. The Urine passing thro' the *Urethra*, Cleanses and
 Cures it with the assistance of Chirurgery.

I have frequently found that the Stone, after having made all
 its way, in order to pass thro' the *Urethra*, has stopp'd at its Ex-
 tremity; which happens to those, the Aperture of whose
Glans is smaller that it ought to be, which we very often see
 towards the insertion of the *Urethra* into the root of the *Glans*.
 A Child was once brought to me which had a Stone stopp'd
 at the end of the *Urethra*, and finding one end of it to be com-
 ing out, I made use of the Point of a Lancet, to disengage this
 part of the *Urinary Passage* above and below, and with small
 Forceps drew out the Stone. The thin Skin which covers the
Glans contracted the Aperture: Those who are afflicted with
 this Indisposition are longer making Water than others. It is
 easily remedied by cutting the small Bridles which close the
 entry of the *Urethra*, which is one of the lightest Operations
 of Chirurgery.

*Manner of
 loosening a
 Stone
 which sticks
 at the end
 of the Ure-
 thra next
 the Glans.*

FIGURE XVI. Of the SECTION of WOMEN for the STONE.



Women
subject to
the Stone.

THO' the Urethra in Women is shorter and larger than that of Men, and by reason of this favourable natural Disposition, small Stones, Sand and Gravel, may more easily pass with the Urine: That Sex is not yet exempted from being afflicted sometimes with Stones in the Bladder, which fatigue them as much as those in Men, and as necessarily must be remov'd by Operation.

Two ways
of extra-
ction of
the Stone
out of Wo-
men.

Women are commonly cut two ways, either by the *lesser*, or *Grand Apparatus*.

The first
without In-
cision.
Use of the
Dilator.

That of the *lesser Apparatus*, not only requires few Instruments, but is executed without making any Incision, in the following manner, *viz.* The Woman being seated in a high Chair, leaning backwards, her Thighs extended wide and rais'd, the Chirurgeon takes the Probe A, dips it into Oil, and thro' the Urethra introduces it into the Bladder, in order to search for the Stone. The excavated part of the Probe serves to guide into the Bladder the Dilator B, which is no sooner entered

tered than the Probe is drawn out, and the Operator extends the *Urethra* with the Dilator, to the performance of which no great Efforts are requir'd, that Passage being dilatible beyond the bounds of credibility. This done, the Chirurgeon withdraws his Instrument, and having Oil'd two Fingers of his Left-hand, introduces them as is before hinted into the *Vagina*, if the Patient is a married Woman, and into the *Anus* if a Virgin; and with his Right-hand pressing the Belly, he gently moves the Stone to the Neck of the Bladder, from which it easily enters the Mouth of the *Urethra* already dilated. When he discovers the Stone, removing his Right-hand from the Patient's Belly, he substitutes that of a Servant in its Place, and retaining the Fingers of the other hand still in the *Vagina* or *Anus*, he with them pushes the Stone into the *Urethra*, then slides behind it the *Crotchet C*, in order to draw it out, as is done in Children cut by the Lesser Apparatus.

Some Operators affirm the great *Apparatus* to be less painful than the Lesser, and prefer it for that reason: But after explaining what farther remains, I shall leave it to your decision. The Patient must be seated in a Chair, bound with Scarves, and held by Servants as Men are, and into her *Urethra* must be thrust the *Probe A*, or the *Conductor G*, which may serve to guide a simple Dilator made purposely for Women; and of which there two sorts, the one without a Spring D, and the other with one E, which more commodiously opens that Part.

The Choice of either of them is left to our liberty; but that with the Spring is most used. Having gently widen'd the *Urethra*, and the Dilator being open'd, with a strait Incision-knife F, the extreme Orifice of the urinary Passage must be cut a little to the Right and Left. This Incision must be larger or smaller in proportion, according as we conclude the Stone to be great or little: The Dilator is then drawn out, and on the Probe or Conductor G, which must be first thrust into the *Urethra*, we guide the *Forceps I* into the Bladder, and then withdraw the Conductor: With the *Forceps* we search for, and seize the Stone, which we must draw out by gentle Motions alternatively on the one side and the other, without any great force. We may make use of a small *Gorgeret H*, somewhat narrower than that used in the Section of Men; and some content themselves with an excavated Probe. The fewer Instruments we use the better: In the Cup K is Oil to moisten all the Instruments as they are us'd.

In above three fourths of the whole number of Women which are cut, there remains an involuntary evacuation of Urine, especially in those from whom a large Stone has been taken. This Accident never fails to attend them, by reason that the too great Dilatation forces and breaks the Fibres of the *Urethra* and *Sphincter*. If we could extract the Stone by the *High Apparatus*, this Inconvenience would be avoided; but I dare

The second, by Section of the Urethra.

Different Dilators.

Manner of moving the Forceps.

Inconvenience of this Operation.

How to avoid it.

not advise it before having seen it several times practis'd: yet since that way has been found to succeed with Men, I don't doubt but it may be proper for Women. 'Tis then to be wish'd that those Chirurgeons, who run into the Practice of *Lithotomy*, would try some Experiments on Persons void of all Hopes of Life, and that they would venture the trial of it on Women which they foresee cannot be freed from the Stone but with great Difficulty and Danger, by the *Less* or *Great Apparatus*, which always prove more painful to the Patients than the *High Apparatus*.

The History of Brother James, or Frere Jaques.

What has happen'd at the Court and at *Paris* with relation to *Brother James*, so nearly regards the *Lithotomists*, that I thought it proper to relate the History of it in this place; which I shall accordingly do with utmost Fidelity, that the Publick being truly inform'd of it, may be enabled to judge whether the manner of Operation of this *new Lithotomist* ought to be prefer'd to the other ways hitherto practis'd.

Conduct and way of living of Brother James. In *August* 1697 arriv'd at *Paris* a sort of a Monk, in the Habit of a *Recolet*, with this difference only, that he wore Shooes, and instead of a Cowle had a Hat. He assum'd the Name of *Brother James*, and appear'd Plain and Ingenuous; his Diet was very sober, he living on Pottage and Bread only; he had no Mony, and never ask'd any more than a few *Sols*, to pay for the setting of his Instruments and mending his Shooes. He form'd to himself a Religion according to his own Fancy, back'd with Vows, the liberty of Dispensing with which he left to his Ordinary at pleasure.

His Proposals at his arrival at Paris. He then came from *Burgundy*, bringing with him many Certificates of his Operations perform'd in those Parts. He made himself known at *la Charité* by means of *Mr. Mareschal*, at present first Chirurgeon to the King, and was disgusted that he would not let him cut in that Hospital, being, said he, come to *Paris* on purpose to learn the Chirurgeons a particular way of performing that Operation. But it not being customary to expose the Patients of the *Hôtel Dieu* nor the *Charité* to the Trial of Experiments, they allotted him a dead Body, into whose Bladder they convey'd a Stone; he drew it out his accustom'd way, in presence of the Chirurgeons of *la Charité*, who from that first time dislik'd his way of Section.

His Reception at Court. *Brother James*, dissatisfy'd with his Entertainment at *Paris*, left it in *October* following to go to *Fontainebleau*, where the Court then resided. He address'd himself to *Mr. Duchesne*, first Physician to the Princes, to whom he delivered several Letters of Recommendation which he had for him, and withal shew'd him all his Certificates. *Mr. Duchesne*, charm'd with his Re-

lation,

lation, as well of the Design which brought him to the Court and to *Paris*, as of his manner of Operating and the great number of Operations which he had perform'd; and animated by a Zeal which cannot be enough commended, mention'd *Brother James* to Monsieur *Fagon*, the King's first Physician, and Mr. *Bourdelot* first Physician to the Dutcheſs of *Burgundy*, and ſeveral others, who all concluded it requiſite to ſee him Cut. A Shoemaker's Boy at *Versailles* offering, who was afflicted with the Stone; Monsieur *Duchefne* cauſ'd him to be put to a Nurſe, and provided with all things neceſſary. *Brother James* perform'd the Operation in the preſence of the Gentlemen the Phyſicians, and Monsieur *Felix*, firſt Chirurgion to the King. The Section ſucceeded well, and they went away all very well ſatiſty'd, and Monsieur *Felix* himſelf took *Brother James* to his Houſe, Lodging and Dieting him during his whole ſtay there.

This Operation made a great Noiſe, and was publiſh'd by the whole Court. Monsieur *Duchefne* inform'd the Princes of it, and acquainted them every Morning of the State of Health of the Patient. He look'd on *Brother James* as a Man ſent from God for the Relief of thoſe afflicted with the Stone, by an eaſier and leſs dangerous Method than thoſe already practis'd. And really the beginnings of the Operation of the Shoemaker were ſucceſſful: It was expeditiouſly perform'd, and the Patient voided his Urine thro' the ordinary Paſſage in a ſmall time after it; nor was it attended with any ſupervening ill Accidents; but the Shoemaker was ſeen walking in the Streets three Weeks after undergoing this Section.

Brother James affirming beſides that he had a new way of curing *Hernia's*, ſeveral Children and Men which had thoſe Fallings, were ſought out; he perform'd three or four Operations in preſence of the ſame Phyſicians and Chirurgeons, who having ſeen him ſeparate the Teſticle, which he took out by an Inciſion on the *Scrotum*, and cut it off without heſitation, did not approve this way of Operating, but on the contrary condemn'd it, as being perſwaded that the Teſticles ought to be preſerv'd as neceſſary Parts. This laſt Operation, in which he perform'd it, being then unanimouſly rejected, he kept to that relating to the Stone, which he practis'd in the following manner.

He ſet no value on any Preparations; he did not deſire that the Patient ſhould either Purge or Bleed before the Operation, but cauſed him to be ſeated at the edge of a Table, expos'd to the Light; after which he laid him backwards, only laying a Pillow under his Head, he made his Thighs and Legs to be held wide aſunder, and ſo bent and elevated that his Heels were near his Buttocks, and this by two very ſtrong Men, by reaſon he did not tie them, but depended on their Strength.

Place
where he
thrusts in
his Pony-
ard.

He aban-
don'd his
Patient af-
ter having
taken out
the Stone.

His return
to Paris.

Fresh Ex-
periments
which he
made.

Instance of
the Cure of
a Wound in
the body of
the Blad-
der.

He introduc'd into the Yard a greased Probe, not excavated; whose end serv'd him to push outwards with his Left-hand that part of the Bladder where he was to make the Aperture; then taking in his Right-hand a long Incision Knife shap'd like a Ponyard, he plung'd it into the Flesh near the end of the left Buttock, two Fingers breadth from the *Perinaeum*, and thrusting it directly towards the Region of the Bladder, opened that Organ in its Body as near the Neck as he could: He did not withdraw his Incision-Knife 'till he had made the Aperture as large as the Bulk of the Stone requir'd. He made use of a Conductor to guide in the Forceps, almost like ours; and frequently before the introduction of this Instrument, he with his Finger thrust into the Wound search'd the place where the Stone might possibly be lodg'd. When his Forceps were charg'd with the Stone, he drew it out suddenly and roughly, not at all reflecting on the ill Consequences which might attend his violent Practices in the Extraction of that exotic Body. If there were several, he drew them out the same way as the first, and when he saw them all out, he believ'd his whole Work to be done; for he never thought of preparing any *Apparatus*, nor ever troubled himself with dressing his Patients, never keeping any *Astringents* or *Defensives*, but contented himself with the application of a little Oil and Wine to the Wound to perform the whole Cure; and when the necessity of dressing the Patient well was represented to him, he has answer'd, *I have drawn out the Stone: God will cure him.*

The Court removing to *Versailles*, Brother James went to Paris, which City his Reputation had reach'd before him. He there found every Body inform'd of what he had done at *Fontainebleau*, and every one busied in finding him Subjects, believing they did their Friends a Service in putting them into the Hands of Brother James. He Cut five or six, some of which died. He went to the *Charité* at *Versailles* and Cut four, one of which was an *Irish-Man*, in whose Bladder, instead of a Stone, he found a Leaden-Bullet, crusted over with a gravelly Matter: It had incommoded the Patient as much or more than it would have done if it had been a Stone, and oblig'd him to be Cut for it: This Patient had four or five Years before receiv'd a Musquet-shot in the Lower-Belly, the Ball pierc'd his Bladder and continued there, encreasing in Bulk to the time of the Operation: which shews that Wounds of the Bladder easily heal, and that we need not be afraid to take Stones out of it by the high Operation. Another of these four Patients was a little Girl aged seven Years, who dy'd three days after the Operation. Monsieur *Felix* sent for me to go with him to the Dissection; we found the Bladder open'd in its Body near its Neck, that is at the place which he was accusom'd to open; we saw in the *Vagina* a Wound of the length
of

of a Nail, which was made by the Edge of the Incision-Knife, in thrusting it along that Sheath to come at the Bladder. *Brother James* said on this occasion that the Wounds of the *Vagina* are of no consequence, and that he had frequently happen'd to pierce that part. The World was too much prepossess'd in his favour to admit any Impression against him from hence, and the Death of the Child was ascrib'd to several Worms which we found in the Intestines, and to some which she voided before her Death.

Common in him to pierce the Vagina.

The Authority of the Magistrates and amongst other of Monsieur the first President, were made use of to procure an Order, that in the approaching Spring, the Season of Cutting at the *Hôtel-Dieu* and *la Charité* at Paris, that *Brother James* should Cut at those Hospitals, for the World was perswaded that his Method being the best, ought to be practis'd, and the other hitherto in use abandon'd. At several times he perform'd about fifty Operations in these Hospitals. The Crowds to see him Cut were inconceivable; there was not a Physician or Chirurgeon which did not strive to get in; insomuch that they were forc'd to have Guards to keep off the Press, and to the number of Two hundred Persons have at once been present at his Operations.

Indifferent success of his Operations.

Of those which he Cut, the number of those who dy'd exceeded those which recover'd; we every day heard of the death of one of them, and in one day there dy'd seven of them at *la Charité*. This number of dead, which should have open'd the Eyes of the most zealous Admirers of *Brother James*, had a clear contrary effect; for being unwilling to own that they had too rashly expos'd their Judgment in his Favour, they cast the cause of so many of these Instances of ill success, on the Chirurgeons of the *Charité*, loudly declaring, That out of jealousy of this new Operator, they must have poison'd these Patients, alledging that it was impossible for them to die in such numbers and so suddenly without some cause foreign to the Operation.

True Causes of this ill Success.

'Tis not difficult to justify the Chirurgeons against these Calumnies: The Dissection of the Bodies of these Dead was a Proof of their Innocence; the manner of their Deportment towards *Brother James* was such, that he could in the least complain of, and the Reception which they give all those who bring them any thing new in Chirurgery, shews that they aim at nothing besides the perfection of that Art; and if they ran in Crowds to see him Cut, 'twas rather to learn his Method, which was given out to be surprizing, than to Criticize on, or Condemn it. 'Tis then unjust to accuse them; no more is requisite than to examine the Nature and Consequences of this Operation, to convince us that the cause of these Disasters ought to be ascrib'd to him alone; and it ought rather to be wonder'd at, that all his Patients did not perish by the terri-

ble Inconveniencies which we have seen attend that Operation, which I will now recite.

His rash
way of
plunging
his Incision
Knife.

Brother James not having any guard to stop the point of his Incision Knife, commonly thrust it too far, which occasion'd his piercing the Bladder in several places, for pressing on the Patient's Belly he forc'd the fund of the Bladder to approach its Neck; so that though the Incision enter never so little a way into this Organ, it presently touches its Fund, which has been also found open'd in several of those which died; which is the reason why *Brother James* would not cut those who had small Stones, by reason that searching and groping for the Stone, with the Point of the Incision Knife, he easily found it when large, but difficultly when little: The great ones stopp'd the Knife, and on them he could cut the Bladder as much as he judg'd necessary to draw them out; but the small ones did not at all stay the Instrument, whence he frequently pierc'd the Bladder in three or four Places.

Bladder
pierced in
three or
four places.

Neck of the
Bladder
cut.

It has sometimes been found that he has cut the Neck of the Bladder a-crofs; that it was wholly separated from the *Urethra*, by reason that not having met with any thing to guide his Incision Knife, he has cut the Neck instead of the Body, which he pretended to open near that part, and then finding his mistake, he was obliged to make another Incision near the same, to draw out the Stone; but, judge you, whether a Bladder so cut can heal, and whether the Patient must not dye of it.

Rectum
open'd by
the same
Lithotomist.

It frequently happen'd that *Brother James* also open'd the Rectum, by reason that his Incision-Knife gliding along that Intestine to come at the Bladder, and the Entrail coming too near one of the Edges of that Instrument, occasion'd the making of an Incision longways; 'twas out of doubt that the Rectum was open'd, for the excrementitious Matter issued out of the Wound. He had some also under his Hands who did not immediately dye of this Accident, whose gross Excrements issued out by a Fistula which remains on them.

I have already told you that *Brother James* was not at all surprized when he had open'd the *Vagina*; that happen'd to him in almost all the Women he which he cut: He affirm'd, that the Wound was not mortal, nor even dangerous, but that it easily healed. I saw him cut two, whose Blood, as the Incision was made, issued out at the external Orifice of the Womb; which was a certain evidence that the *Vagina* was cut.

The Inte-
stine, Vagi-
na and
Bladder
cut toge-
ther.

I have been also told that there are some Women whose *Vagina* and *Rectum* he has open'd both together, their gross Excrements issuing out through the Neck of their Womb; so that these poor Women became Objects of Compassion, having at the same time three considerable Wounds in three different Parts, the *Bladder*, *Vagina* and *Rectum*.

'Tis not sufficient barely to have performed the Operation well, the Ability of the Chirurgeon is shewn in well cutting the Patient, and carrying him on to a perfect Cure. *Brother James* was a bold Workman, but took no care of Cicatrizing the Wound: His Talent was that of going from City to City, and cutting all that offer'd; but that done, he immediately quitted and abandoned his Patients, without ever thinking of the Consequences; whence proceeded the numerous Certificates *Several* with which he was always provided, by reason that he hurried *Certificates* them from those who were present at the Operation, and con- *given to* sequently thereby enabled to bear witness of his Dexterity and *Brother* Ability in the Extraction of the Stone. But if he had staid *James*. 'till the Cure had been perform'd before he had desired them, they had not been so stuff'd with Elogies of him, as they were immediately after the Operation. For instance, if *Brother James* had desired Certificates of the first Physicians of the Court, as soon as he had Cut the Shoemaker of *Fontaine-bleau*, they had been very advantageous to him; but after having seen that Patient languish at *Versailles*, and dye two Years after he was cut, by reason of the Urine continually running through the Wound, their Certificates would not indeed have been very favourable to that *Lithotomist*.

The sudden and miserably painful Death of the Marshal *de l'Orge*, the next Day after the Operation perform'd by *Brother James*, disabus'd the whole World; even his Admirers dared not to attempt his excuse: They allowed him to be in fault, and Monsieur *Fagon* being press'd to put himself into this *Brother's* Hands, made a better choice in throwing himself into those of Monsieur *Maréchal*, who successfully extricated him out of that Difficulty, though the Circumstances of these two Operations were alike. Monsieur *Maréchal* saved Monsieur *Fagon's* Life, and *Brother James* killed the Marshal *de l'Orge*; which ought to put a great Difference betwixt a Mountebank and a good Chirurgeon.

All the Facts which I have just related were the Causes why the Applause bestow'd on *Brother James* did not prove lasting, and that his Reputation changed into Disgrace soon after its Birth; and those who vaunted it the most were put to a forc'd Silence. He resolv'd to go to *Orleans*, *Lion*, and other Cities of *France*, where he cut as well as at *Paris*. The first Letters which appear'd from those who saw him cut, publish his great Dexterity; but the last following, like those from *Paris*, were not in his Favour; so that *Brother James* is scarce any longer mention'd. Nor are we now told that 'tis probable he may return to his former Practice, and that he will satisfy himself with going from Village to Village, and charitably cutting at the Expence of the poor unhappy Wretches which shall fall under his Hands.

Advanta-
ges to be
drawn from
this Method

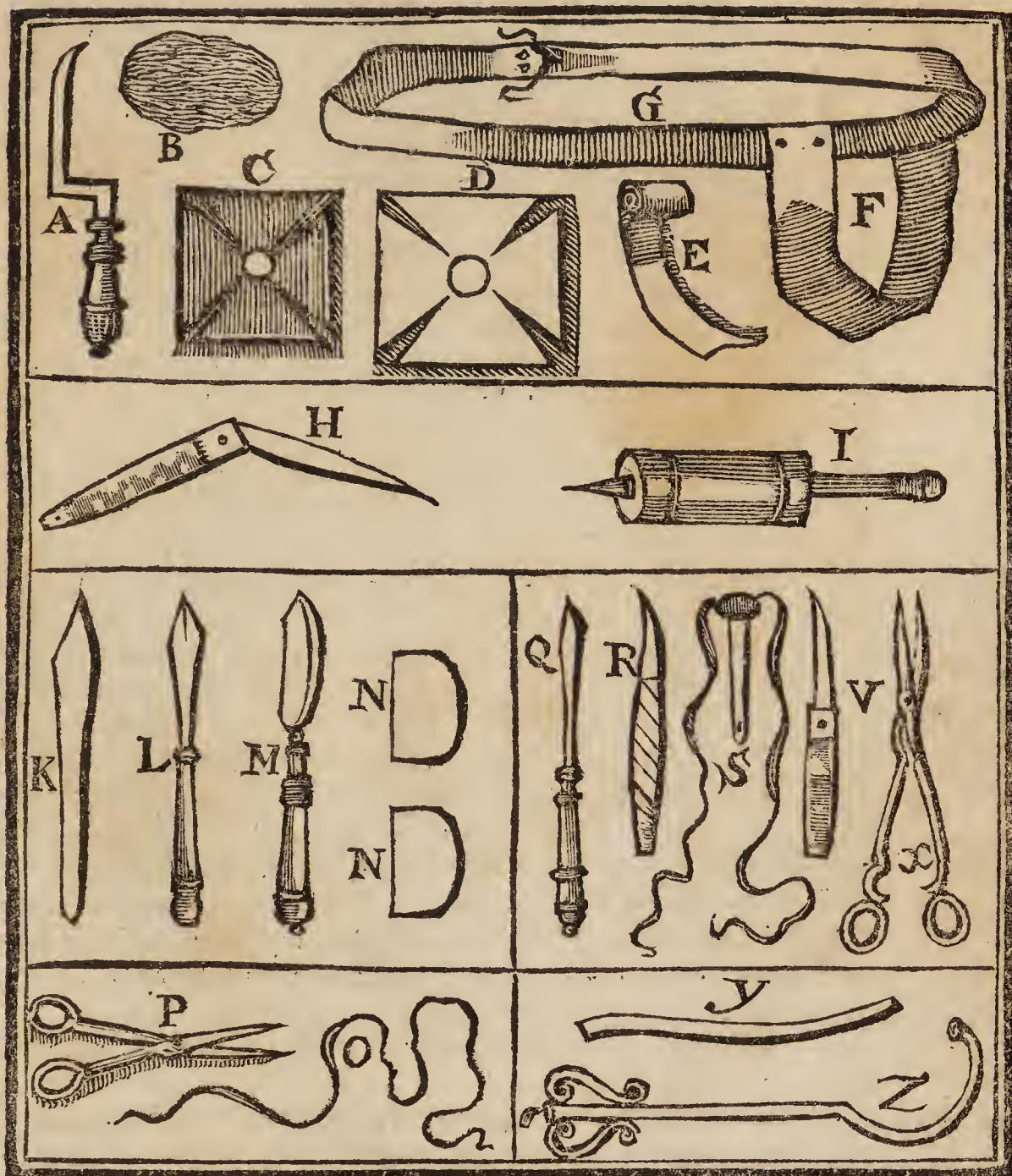
Tho' I don't approve of Brother *James's* way of cutting, I don't yet absolutely condemn it; for there is something good in his Method. I then draw from it two Advantages, the one with regard to the Punction of the *Peritoneum*, which I advise to be made at that Place of the Bladder where he makes his Incision, in order to draw out the Stone; and the other, with relation to the Aperture, which I propose to make of even the bottom of the Bladder, in order to draw out the Stone by the *high Apparatus*. In short, I am perswaded that a Chirurgeon who is a good Anatomist, knows how to guide his Instrument, and is so far Master of it, as to carry it where he pleases, may succeed in the Practice of Brother *James's* Method, by reason that he would avoid all those pernicious Accidents which attended his Performance: But 'twould be to expose the Patient to too great Dangers, to cause him to be cut by that Brother, who being wholly ignorant of the Parts which must be cut, his bold Assurance in thrusting in his Ponyard, proceeds only from the want of a sufficient Stock of Knowledge to foresee the Consequences. No Man ever saw him cut that did not tremble, and Chirurgeons themselves, tho' hardened to these sorts of Operations, were startled at seeing him hold his Knife so long in the Wound.

How to
perfect it.

To conclude, the Advantage resulting from this Relation is, that we are hereby instructed not to applaud with too much Precipitation what appears as new. In Physick, all proposed Remedies are to be received; and in Chirurgery we ought to see all new Inventions practised, which boast of a better Method than any in use: But we ought not to subject our selves to all Novelties. But examining them in both, should chuse the good, and reject the ill. 'Tis thus that Arts are improved, and 'tis thus that Chirurgery has reach'd those Degrees of Perfection, which at present renders it so admir'd.

FIGURE

FIGURE XVII. For the OPERATIONS
of the YARD.



OF all the Parts of our Body, few are subjected to a great-*The Yard*
er number of Diseases than the *Yard*; some of which *subject to*
are cured as well by general as particular Remedies, and others *many Indis-*
require manual Operation. 'Tis the last Species with which *positions.*
I am to entertain you, by instructing you what is requisite to
cure them.

Three

The *Yard* has three Parts which are commonly subjected *Parts of the*
to Operations; they are, the *Prepuce*, the *Glans*, and the *Ure-* *Yard sub-*
phra. On the *Prepuce* are performed two, the *Phymosis* and *jeet to Ope-*
Paraphy- *rations.*

Paraphymosis: On the *Glans* three; it is separated when sticking; the *Shankers* are divided from it, and it is pierced when stopped; and on the *Urethra* are practis'd two, which are the consuming of *Callosities*, and the drawing out of a Stone when stopp'd there. I have demonstrated the last in the Operations for the Stone, and shall now shew you the rest. These are the Operations which are useful, and necessary to be known: There are three others which ought to be rejected as unprofitable, they are the *Recutiti*, *Circumcision*, and *Buckling*; of which I shall say no more than what is necessary to give you a sufficient Idea of them, to incline you to be the first in condemning them.

Of the Operation of *Recutiti*.

By the *Recutiti*, the Ancients understood an Operation which they performed on the *Yard*, when the *Glans* was too far uncovered. They practis'd it two ways, one by making a circular Incision in the Skin of the *Yard* towards its Root, and drawing that Skin forwards 'till the *Glans* was thereby cover'd; and the other was, that after having rais'd the *Prepuce* on the *Yard*, they made a circular Incision on the Internal Skin of the *Prepuce*, near the *Glans*: In both of these Methods, they tyed the end of the *Prepuce* on a small Leaden Pipe, to leave a Passage for the *Urine*, and procure the cicatrising of the two Lips of the Incision. They performed this Operation on those who having the *Glans* always uncovered, found themselves continually incommoded by their Shirt rubbing against it, and cost what it would, were resolv'd to have that Part covered.

Of *Circumcision*.

Circumcision was performed on occasion of an Indisposition directly opposite to that, on whose account the *Recutiti* was practis'd; it was used when the *Glans* could not discover it self. The Chirurgeon made a Ligature at the end of the *Prepuce* above what he designed to cut off, which was about the thickness of one or two Crowns; then, with his Scissars, he cut off that Extremity of the *Prepuce*, which sometimes left it in such a tight Circle, that it did not return on the *Glans*. This Operation is no longer in use amongst any but the *Jews* and *Turks*, who make of it a Ceremony and Mystery of their Religion: 'Tis not at all practis'd by Christians, but the *Robbies* and *Musli's* perform it on all the Male-Infants of their Law soon after their Birth.

Of the buckling of Youths.

I don't know who was the Inventor of the buckling or ringing of Boys: But 'tis an Operation which shocks all manner of good Sense. The Operator drew the *Prepuce* outwards, and running a threaded Needle across it, left in it a course Thread 'till the two Holes were cicatrised; when drawing it out, he run through in its stead a great Iron Buckle, which was left there during the whole time of the Subject's being under the Age fit for Generation. They affirmed, that this Buckle hindring the Youths having any Commerce with Women, 'till the Age of twenty five, when they took it off, their Strength was not dissipated, but thereby preserved for the Procreation of strong Children, and such as should be able to serve the Common-wealth. These

These are three useless Operations, especially in Northern Uselessness and temperate Countries, where the *Prepuce* is not subject to of these shorten, or grow to an excessive length as in hot Climates, three Operations. where *Circumcision* is frequently necessary, and where the Passions. of Love so early hurries Men on to the Performance of its Rites. Let's now proceed to the practical Observations.

The Word *Phymosis* is derived from the Greek Verb *Phi-* Of the *moein*, which signifies to close or streighten, because the Extre- PHYMOSIS mity of the *Prepuce* is so strait, that it does not allow the and its *Glans* to discover it self; so that this Indisposition is nothing ETYMOLO- but a too strait Closure of the *Prepuce*, whose Extremity forms CY. a circular Bridle, which obstructs the free Use of the *Glans*, and this Disease happens either naturally, or by Accident.

This Indisposition is termed natural, when a Child from its A natural Birth has the end of its *Prepuce* very streight. There are several Phymosis. to whom this happens, who in growing up, have it by little and little enlarged; so that the *Glans* comes naturally to shew it self; but there are others whose *Prepuce* is so closed, that 'tis impossible to perceive the Extremity of the *Glans*. 'Tis affirmed, that this draws on two Inconveniencies, one of which Inconveni- is the Obstruction of Generation, by hindring the Ejection of encies of the Sperm with a quickness sufficient to be received in the this Indis- Matrix; and the other, that it engenders a thick white Mat- position. ter betwixt the *Prepuce* and the *Glans*, which not being possible to remove, it grows sharp by its Stay, pricks and causes an itching of the *Glans*, which is the more fatigued, because more sensible in these Persons. But yet these Reasons are not sufficient to engage us to proceed to Operation: For in answer to the first, I must tell you, that I have known Persons with this Indisposition upon them, who have yet begot Children; of which there are a thousand Examples: And the second Inconvenience is easily remedied, by holding the end of the *Prepuce* close with the Fingers, while the *Sphincter* is relaxed for pissing, when the Urine filling the *Prepuce*, rinses and cleanses the *Glans*, freeing it from the thick Matter gather'd there, and carrying it off with it in its rapid Stream, when it quits the *Prepuce*.

This Disease is call'd Accidental, when 'tis caused by pocky Accidental Shankers and Ulcers, which canton themselves around the *Glans*, Phymosis. or by a Swelling and Inflammation of the *Yard*, whence the *Glans* being too strait enclosed by the tumefied *Prepuce*, may fall to Mortification: In these two Cases, we must immediately proceed to the Operation, which consists in making an Incision on the *Prepuce* from its Extremity to the Crown of the *Glans*, in manner following.

Having before the Operation prepared the Patient, if neces- Posture of sary, and disposed the Apparatus, the Operator seats him in the Patient. an Elbow-Chair a little inclined backwards; and then takes in his

his Right-hand an Instrument made on purpose for, and used in no other Operation but this ; 'tis furnished with a Handle, and has a Point and Edge like a Pen-knife. You see it mark'd *Manner of A*; and being pointed, the Chirurgeon puts at its end a small performing Globule of Wax as big as a Grain of Coriander seed, which the Opera- keeps it from pricking in sliding betwixt the *Glans* and the Prepuce. When the Point of the Instrument has reached the Crown of the *Glans*, the Operator holds the *Yard* firm in his Left-hand, then pushing the Instrument pierces the *Prepuce*, which he cuts from the Crown of the *Glans* to its Extremity, in drawing the Instrument back to him : This must be so perform'd, that the two Membranes of the Foreskin be cut equally. The Chirurgeon suffers a small quantity of Blood to run from the Incision to clear the *Yard*, then he dresses the Wound, applying a *Pledget B*, cover'd with an *Astringent*, a *Plaster C*, shaped like a *Maltese Cross*, and pierced in the middle, in order to leave a Passage for the *Urine*, with a *Bolster* of the same Figure, wetted in *Oxycratum*, and a small *Band* or *Roller E*, with which he makes a circular *Bandage* about the *Yard*, which is then put into a small *Sling* or *Suspensor F*, fasten'd to the circular *Bandage G* run around the *Belly* ; and this is done to prevent the Parts hanging down, or the provoking of any *Fluxion*.

Whom it concerns to have this Operation perform'd. This Operation is absolutely necessary to those whose *Prepuce* is closed up by *Shankers*, or *pocky Ulcers* around the *Glans*. To cure these Indispositions, they must be dress'd, which cannot be done without uncovering the *Glans*: If no Remedies are applied, the *Shankers* will corrode the *Yard*, or produce the *Pox*; wherefore we must have recourse to Operation. But we ought to avoid it, with regard to those who are impatient in bearing their *Glans* uncovered, therefore only press us to it. Accordingly I have used it to some who had no other reason to desire it, than the desire of being made like others.

The place where the Incision rather to be made. I can't tell the reason why the Incision is order'd to be made on one of the sides of the *Yard* ; 'tis not to avoid the Vessels, for they are equally spread in all the Circumference of the *Prepuce*. For my part, I make it in the middle and upper part of the *Yard*, and find that in this place the Incision is deeper, the *Glans* discovers it self better towards the right and left, and the Deformity is less than when 'tis made on the Sides.

Of the PARAPHYMOSIS. The word *Paraphymosis* is compos'd of *Para*, which imports greatly or beyond; and *Phimoein*, which signifies to close up, because the *Glans* is so closely shut up at its Root by the reverting of the *Prepuce* beyond the place from whence it advanced, that without a speedy Remedy 'twould Mortifie. This Disease is directly opposite to the *Phymosis*; in the former the *Glans* is too closely cover'd, and in this 'tis too naked. Some Authors make two sorts of *Paraphymoses* ; the one *Natural*, the other *Accidental*.

That

That which is call'd *natural*, is when the *Prepuce* being naturally very short, reverts wholly beyond the Crown of the *Glans*, and ceases to cover it any longer: When those who are troubled with this light Indisposition require help, some Authors are for applying to them the Operation of *Recutuli*, of which we have already spoken; but the Practice of it is worn out: Those who are Circumcised are subject to this sort of *Paraphymosis*, because their *Prepuce* is cut shorter.

The *Accidental Paraphymosis*, is, when by violence the *Prepuce* is forc'd back beyond the *Glans*, and being naturally strait, it cannot return back and cover the *Glans*, being stopp'd by the largeness of its Crown. This frequently happens to Children whose *Glans* is not yet discover'd, and who instigated by a fanciful desire of seeing it, have forcibly drawn back the *Prepuce* beyond the *Glans*: This also happens to new married People in their efforts to depuccetate their Virgin Spouses; for by the Violence with which the Yard endeavours to enter, the *Glans* is stripp'd, and the Fore-skin cannot return to cover it again. I have seen a young Man to whom this happen'd on his Wedding-day, and who three days afterwards came to me with a raging *Paraphymosis*, believing it to be the *venereal* Disease which he thought his Wife had given him: I reduc'd it, and told him, on the contrary, that 'twas a Proof that his Wife was a Virgin, and if she had not been virtuous, she had spar'd him the Pain which he had endur'd.

Those who direct the Cure of the *Paraphymosis* by Medicaments, must needs be very little instructed in the Nature of this Indisposition: I cannot comprehend how they can depend on Oils, Cerats, and Cataplasmes, for the cure of a Disease sufficiently pressing, which will not allow us to defer one Moment the reduction of the part to its natural estate, at least unless we will suffer the Yard to gangrene. In the *Phymosis* we must prepare our Apparatus before we go to work; but in the *Paraphymosis* we must begin with immediately revesting the *Glans* with its *Prepuce*, and then prepare the necessary Remedies and Bands. The miserable estate of a Yard attack'd by a *Paraphymosis*, and the Pains which the Patient feels, require a more speedy Relief than that of Topics, prescrib'd frequently by those who don't in the least know in what Danger the Patient is.

We must then proceed to the Operation, which consists in getting the *Prepuce* over the *Glans* in order to re-cover it; which must be instantly done, and the Patient not left 'till 'tis done. To perform which, the Yard must be dipt into cold Water for a small time, that by the Coolness of the Water the Spirits being driven back, the Bulk of the *Glans* may decrease, which was before very big and hard; then taking the Yard betwixt the fore and middle Fingers of both Hands, whose Backs must be turn'd to the Patient's Belly, we bring the

the *Prepuce* over the *Glans*, which at the same time we push back with our two Thumbs, endeavouring to force it again into its Purse. If the *Glans* has not been long uncover'd, we may expect success this way; but these sorts of Patients not discovering themselves to the Chirurgeon 'till the Extremity, when the Yard is much swell'd, and there are on the *Prepuce* a sort of Pustules fill'd with a reddish Water, which tumefie it in an extraordinary manner, and there are a sort of circular Fissures or Chaps which partly divide the *Glans* from the Yard, the Chirurgeon is oblig'd with the Point of the Lancet H, to make small Incisions on the internal Membrane of the *Prepuce*, in order to relax the place where the *Glans* is too straitly bridled; he makes as many of these small Incisions as are necessary to leave liberty to the *Prepuce* to come over the *Glans*; which is not then difficult if he holds the Yard as already directed.

Treatment of the Patient after the Operation. When the *Glans* is restor'd to its Lodging, the Operation is finish'd. The Chirurgeon then prepares his Apparatus in the same manner as in the *Phymosis*, he embrocates the Belly, which he covers with a Bolster dipt in *Oxycrat*, he applies another to the *Scrotum*, bleeds the Patient some time after the Operation, and keeps his Belly open by cooling Glysters, obliging him to a proper regimen of Living, in order to avoid the grievous Consequence of a Distemper of this nature; and at the expiration of some days, it will be proper to Inject with a Syringe I, *abstersive Injections* under the *Prepuce*, to mundifie and cleanse the Wounds made by the small Incisions which the Chirurgeon was oblig'd to make, after which its *Cicatrising* must be procur'd.

Advice of some Chirurgeons to be avoided. I find in some of the Modern Authors which have written concerning Operations, that we must with our two Thumbs push around the *Glans* in order to force it to re-enter, and not thrust its Extremity towards the Root of the Yard, by reason that its Substance being softish, to push it in this manner would enlarge its circular Bulk, and hinder its returning to its Place. Those who give us this Rule, discover themselves to be scarcely Chirurgeons, for if they ever had practis'd this Operation, they would know that the *Glans* is then so tumefied and hard, that what Efforts soever may be made toward the covering of it again, 'tis impossible to enlarge it by pushing its Extremity: We must refer our selves to those who are actual Practitioners; and no Person can better instruct others on the head of Operations, than those who have practis'd them for a long Series of Years.

Of the Adhesion of the Prepuce to the Glans. The Adhesion of the *Prepuce* to the *Glans*, which sometimes happens, is call'd *Symphysis*, from *Syn* which signifies together, and *Phyein* to stick, because that then the *Prepuce* is closely stuck to the *Glans*. We have seen Children come into the World with the *Prepuce* glued to the *Glans*; and when the Patient

Patient is born so, the Separation is very difficult, because those two Parts being form'd together, are join'd in the whole circumference, and make as it were but one continued part. But yet we must endeavour to separate them with an Instrument call'd the *Small Myrtle-Leaf K.* a little sharp, which we gently thrust betwixt the *Glans* and *Prepuce*, carefully avoiding the piercing the latter, which is thin, and not easily heal'd. Also lifting up the *Prepuce* with the *Lancet L.* we *Manner of* may dissect and separate the two Membranes of the *Prepuce Incision.* and the *Glans*, in the same manner that an *Anatomist* divides the two contiguous and connected Membranes from one another; and if in the performance of this Operation 'tis impossible to avoid cutting one of these Parts, it ought rather to be the *Glans* than the *Prepuce*: But a dexterous Chirurgeon will separate them without hurting either of them; that done the Operator must daily slide in an *Ivory Myrtle-Leaf* to prevent their Re-union.

It frequently happens that this *Adhesion* supervenes the Operation of the *Paraphymosis*; for if the *cicatrising* of the *Incisions* made on the internal part of the *Prepuce* be neglected, *Of the accidental Symphisis and its Origine.* that part will inevitably stick to the *Glans*; as it also frequently does after *Ulcers* and *Shankers* imperfectly cured. In these Cases 'tis easily separated, because it sticks only at the ulcerated places, and is not wholly glued, as when the Patient is born so. This Indisposition chagrines married People, because the performance of the conjugal Duty in perfection is thereby obstructed; and that brings them to the Chirurgeon, who separates the Parts in the manner above mention'd: The Separation perform'd, the Chirurgeon slides in betwixt the *Dressing of Prepuce* and the *Glans* the small bits of Linnen *NN.* dipt in *the Patient* some *desiccative Water*, such as the *Vulnerary Water*; which *after the* is continued 'till the whole be *cicatrised.* *Operation.*

It frequently happens that there grows on the *Yard* small *Of WARTS* *Verrucal Excrescencies* which are call'd *Warts*: The *Italians* on the call them *Poreisfigli*, from their resembling of *Figs*. These *YARD.* *Excrescencies* are compos'd of soft *Flesh*, and are slimy and very thin: Then multiply with great Expedition, wherefore the Cure of them is not to be deferr'd. These sort of *Warts* almost always proceed from an impure Cause, contracted by *venereal Conjunctions*, which obliges them to have recourse to the Chirurgeon, without whom they will grow and produce several others in several Places.

Two ways of curing of them are propos'd, one by *Medicaments*, and the other by *Chirurgery.* *Two ways of curing*

The *Medicaments* used in this Case are of two sorts, first *them.* those which mortifie the *Flesh*, by changing it from lively and *Choice of* ruddy, to flaccid and white: Of this sort is *Sabine pulveris'd* *Medica-* and applied to them; the other Species is of those which con- *ments.* *sume*

fume them by *slow Corrosion*, as do the *Unguents* of *Chalcity*, and that term'd *Unguentum Ægyptiacum*.

Chirurgi-
cal Me-
thods.

How this
Operation
is to be
compleat-
ed.

The Chirurgical means of removing them are also two, by *Ligature* and *Scissars*. We apply *Ligature* to those who are narrow at bottom; we bind them with the fine red Silk O, which done they commonly fall off in two Days. But there being frequently many of them which cannot admit of a *Ligature*, we rather cut them off with the *Scissars* P, the nearest to the Skin we possibly can. The Blood which springs out must be left to run to the quantity of about a small Pan, after which the Yard must be wash'd with warm Wine, and the Places from which the Blood issues be touch'd with the Point of a *Vitriol Stone*, which has two good Effects, one of stopping Blood, and the other of cauterising the place which it touches, burning the small remaining Roots of the Wart, which afterwards fall off with the Scar.

We are not to expect a perfect Cure of Warts on the Yard without the assistance of general Remedies, for being produc'd by a sort of *Virus*, *sudorific Ptisans* are to be used: The *Mercurial Pills* or *Panacea* will carry off the cause, if we aim at a perfect Cure.

Of an
IMPERFO-
RATED
URETHRA.

When the *Urethra* is not perforated, 'tis a native Indisposition: There are few Chirurgeons who have not been call'd to help New-born Infants, the end of whose *Urethra* was never yet open'd, and consequently they cannot void their Urine: From whence 'tis manifest, that the Serosity in which the Infant floats whilst in the Womb, is none of its Urine, as many Authors have thought, since these imperforated Children could not have ever Urin'd, and yet they have the same Waters as others.

Manner
of perform-
ing the O-
peration.

The Operation consists in the making an Aperture with utmost Expedition, because the Child cannot live long without voiding its Urine. This Aperture is made at the place where it ought naturally to be, with a *Myrtle-leaf Knife* Q, long, pointed, and provided with a Handle, or rather with the *Lancet* R. 'Tis very easie to make the Hole, nothing being requisite besides piercing the Skin which covers the *Glans*. But when the Partitions of the Passage are glued together, we must proceed so far as 'till the Urine issues out, which is the end here propos'd. The Orifice of the Incision must rather be large than small, for several reasons, and I think 'tis not necessary to insert a small *Leaden-Pipe* to hinder the re-union of the edges of the Wound, because the frequent Passage of the Urine prevents its closing.

Three o-
ther defects
of the
Glans.

The *Glans* being imperforated is not the only Defect incident to that part; there are yet three other Indispositions whose Cure requires the hand of the *Chirurgion*, viz. when the Hole is too small, when not pierced at the end; and lastly, when the

Frenulum

Franulum or *Bridle* is too short. Let's then proceed to the Operations necessary to remedy these three Difficulties.

If the Hole of the *Glans* be too small, the *Urine* cannot pass in a Stream bigger than a Thread, or Drop by Drop, when too much time is spent in pissing, and the Seed cannot be ejaculated quick enough. In this case the Aperture must be enlarg'd, which is done either by Remedies or Instruments; the Remedies are a Tent of *Elder-Pith*, or a bit of prepar'd *How to re- Spunge*, with which the Passage is enlarg'd by slow degrees, *medy the* being enlarg'd in proportion to the widening of the Orifice; *first*. but this way is too dilatory, wherefore I advise to make use of the Lancet, with which we enlarge the Hole at its two Extremities above and below. The Operation is perform'd in a moment, being more Expeditious and less Painful than the Tent: The Leaden Pipe is useless here, unless it be when the *Glans* is not perforated.

It frequently happens that the *Glans* is not perforated in the ordinary place, but below it towards the *Franulum*; those affected with this Indisposition, are oblig'd to raise up their Yard in order to make Water; this is call'd *Hypospadias* from the two Greek Words *Hypo*, below, and *Spazein*, to pierce. This frequently proceeds from a Child's coming into the World without any Aperture of the *Glans*, and the Parent's not discerning it, the *Urine* which endeavours to pass out, makes its way near the Bridle, which is the thinnest part of the *Urethra*; those whose *Urethra* is pierc'd in this manner are incapable of Generation, by reason that the Sperm dispersing on the side of the *Vagina*, and being thereby depriv'd of its Vigour, makes but a slow Progress towards the Orifice of the *Matrix*; wherefore this is an Indisposition which necessarily requires Operation.

Cause and Inconvenience of the Second.

We must then, with the pointed *Myrtle-Leaf Q*, pierce the *Glans*, and thereby make such an Aperture as ought to be *How to re- pair it*. there naturally; the Orifice then made, insert in it a small *Leaden-pipe S*, long enough to run beyond the lower Aperture in the *Urethra*, and conduct the *Urine* thro' this new one: Next we must go about the closing the old one, quickening the Edges of it by small Incisions, and procuring its cicatrising: The Pipe must be left in the urinary Passage, which must be kept fast and tied to it with the String *T*, 'till the Cure be perfected, that the *Urine* no longer passing thro' the old Orifice may not hinder its re-union. If we cannot close this Hole, some Authors direct us to make an Incision on the *Glans* from the first Aperture to the second, cutting it like a writing Pen with the small Incision-knife *V*, that so the *Urine* and Seed passing thro' a large Pipe, may be cast to the Places where they ought to go.

Advice of some Practitioners. An extraordinary Cause of an Aperture made in the Ure-

I have seen some Children whose *Urethra* has been pierc'd two or three Fingers breadth distant from the *Glans*: These were from the *Glans*.

were Children subject to piss their Beds, and who to escape Correction, which frequently fell on them, tied their Yard with a Thread, concluding that an infallible way, and in the interim the Urine pressing its passage, after violent Pains, made a way near the Ligature, through which that Serosity continually pass'd afterwards. To cure these Patients we must thrust into the *Urethra* a small Leaden Pipe, which must be run beyond the Orifice, whose re-union we aim at.

Inconveniencies of the third Defect. There are some who are born with the Bridle of their Yard too short; this *Frænum* draws the *Glans* downwards, particularly at the time of Erection: Whence the Aperture being at that time too low, if the Yard be not rais'd, the Person will piss on his Legs or Feet, and 'twill be impossible for the Seed to be darted directly into the Matrix, whence the generative

The Operation which cures it. Work will be obstructed. To remedy this Inconvenience then, by a light *Scissure* of the Incision-knife or Scissars X, we cut the *Bridle* across, in the same manner that we do the String under the Tongue, and so by a very light Operation remedy two Inconveniencies which it causes. I have seen some who have been cur'd of this Indisposition by a *Shanker* corroding the *Bridle*, but would not advise any to make use of so dangerous a Remedy.

Of the CARNOSITY. Tho' *Carnosity* be a general Term, signifying all manner of superfluous Flesh engender'd in any part of the Body whatsoever, yet Custom has made us to understand by that word, an excrescence of Flesh which takes up and stops the *urinary Passage*. The reality of the existence of this Distemper, has been thought to have been so firmly establish'd by our Ancestors, that no Person has ventur'd to contest it: they tell us that the virulent Humour of a *Gonorrhœa* incessantly issuing from the *Prostata*, by its Acrimony corrodes the *Urethra*, and that from those Ulcers grows a fungous Flesh which occasions this Disease. 'Tis the Interest of those who pretend to particular Remedies for this Distemper, to confirm rather than detect the Error, and that the rather, because that this Indisposition being abandon'd by real Chirurgeons, is fallen into the Hands of Strollers, and Broachers of Secrets.

Remarkable Instance. *John Baptist Loyseau*, a Chirurgeon of *Bordeaux*, in the Chirurgical Observations which he has left in writing, tells us, that he was call'd to King *Henry IV.* to cure him of a *Carnosity*, that he dress'd him, and accordingly did cure him, and that he was rewarded with the Post of Chirurgeon to His Majesty, which the King gave him. This Story, tho' very memorable, does not prove the existence of *Carnosities*; it indeed discovers that Monsieur *Loyseau* acted the *Secret-Monger*, and play'd the *Mountebank* in publishing his Performance without mentioning either the Means or Remedies which he used. If it was true that the King had a *Carnosity*, and that he consumed it for him,

Reason to doubt it.

him, he should not in Writing of this Story have made a Secret of the Method, nor the Drugs which he us'd in a Cure which was so liberally rewarded; but since he is silent in the essential Part, I take the whole to be Apocryphal.

When we find a difficulty of making Water, and that the Urine drains through in a small Stream, forked and a-crosse, that the Patient when he is inclin'd to Piss is constrain'd to go to the Seat, by the Efforts which he makes to force out his Water, and when he thinks all is past out, there remains yet some in the Bladder, this we call the *Carnosity*: But notwithstanding my diligent Observation, in opening the Bodies charg'd with being afflicted with this Distemper, I have not yet met with one that really was so, nor have I met with any Chirurgeon (I mean worthy of Credit) that ever affirm'd to have seen one. *Experience authorizes this doubt.*

I know that there are many Persons who have the Accidents which I have just mention'd, but they are not occasion'd by *Carnosities*, they are the Effects of one or more *Gonorrhæa's*, which have ulcerated and corroded the *Urethra* in several places, and the Scars of these Ulcers being hard, and inclining to be callous, they straiten the Passage of the Urine, which thence consequently does not issue out so easily, and 'tis the same cicatris'd Scars which hinder the Passage of the Probe, which we believe to be interrupted by a *Carnosity*. *Answer to the Objection.*

Tho' we know the true cause of this Indisposition, 'tis not yet less difficult to cure: In order to which we must disengage the *Urethra* of these callous Scars which render the Passage so strait, that the Urine passes in a Stream no bigger than a Thread; and to that purpose the Probe not being sufficient to open its passage, we must have recourse to Medicaments; for 'twill be only to deceive our selves, to hope to compass our end by the edg'd Probes describ'd by *Ambrose Paré*, and other Authors, to whom I refer you in order to judge of them.

The Chirurgeon then prepares his *Cathartic* or *Caustic Remedy* weaker or stronger, in proportion to the Scars being of fresh or old date; he takes a Wax-candle Y, the end of which he thrusts into the Yard must be a little bent, in order to lodge his Medicament in that Cavity; then he introduces the said Wax-candle into the *Urethra*, thrusting it gently forwards 'till 'tis stopp'd by the Scar, and then leaving it in the Yard, that the *Caustic* then touching the *Callosity* and working upon it, may consume part of it, a small Scar of which will fall off; the next day he repeats the same, and must continue it 'till the Passage is free. He will discover what progress he has made, by observing how much farther the Wax-candle will enter the last times than it did at the first Trial; but the Chirurgeon must not be impatient in this Operation which requires time; for if he prepares a stronger Corrosive in order to hasten the *Remedy to be apply'd to this Disease.*

Progress of the Cure.

The Compleating of the Cure.

the Cure, that will be attended with Pains, Inflammation, and corroding more than is convenient: We must take care to oblige the Patient to make Water before the Application of this Remedy, that remaining two or three Hours applied to the *Callosity*, it may have time to remove the Scar. When the Candle enters as far as the Bladder, and the Patient pisses in a full Stream, there is nothing more left to be consumed; but then the Chirurgeon must dry up the Places which the Caustick has touch'd, which is perform'd by *desiccative Liquors* frequently Syring'd into the *Urethra*, and by a leaden Probe 'Z' rubbed with *Quick-Silver*, which he must often introduce, in order to keep the Passage continually free and open, 'till it *Cicatrize* anew.



FIGURE

FIGURE XVIII. Of the Operations perform'd on the
M A T R I X.



THE *Matrix* is not less subject to Chirurgery than all the other Parts of the Body, being attack'd by an infinity of Diseases, several of which will admit of no other Cure than from the hand of a Chirurgeon : This is incontestably the most sensible part of the Body ; and the Chirurgeon must treat it with more nicety and precaution than the rest.

Of those Diseases which require Operation, some happen to Several the *external Orifice* of the *Uterus*, and others to the *Fundus* : Diseases of Those of the *external Orifice* are of two sorts, *viz.* when that the *Ma-* part is stopp'd, and when some exotick or unnatural Body *trix*.

grows there: Those of the *Fund* of the *Uterus* all reduce themselves to delivery, and its Consequences.

Closure of the external Orifice. The *Orifice* may be stopp'd in two different places, either at the *Lips*, or at the *Caruncles*: Both which Places the *Chirurgeon* must open, wherefore he cannot be too exactly informed of the difference of them, in order to prevent his being deceived.

Different Causes of the juncture of the Lips of this Part. When the two *Lips* are joined together, they are either wholly or partly so. They cannot be closed throughout their whole extent by any other occasion than a natural defect, be-
cause that being naturally separated, the *Urine*, which continually passes, will not allow them to be join'd together from one end to the other: If then they are but partly so, that may be ascribed to their first Formation, or rather to some accident happening after the Birth, as *Ulcers* ill dress'd, or *Pustules* supervening the *Small-Pox* betwixt the *Lips*, which they glew and partly join together in *Cicatrizing*.

When the closure of the *external Orifice* is found to be at the *myrtiform Caruncles*, it was so from the first formation, there being no external Cause which can absolutely close it up. There are ordinarily some small *Fibres* which keep the *four Caruncles* as it were tied together, and which, shutting them, make them resemble a *Rose-bud* half blown: 'Tis these *Fibrille*, which when broken by the first approach of the *Husband*, when the *Yard* forces its entrance, which sometimes shed some drops of *Blood*, which is the mark of *Virginity*; but when, instead of simple *Fibres*, Nature in the Formation of the *Fœtus* has placed here a strong *Membrane*, which joining with the *Caruncles* will not allow them to admit the *Yard* into the *Vagina*, then the *Husband's* Efforts are vain, he cannot force this Barrier, but the *Chirurgeon* with his *Incision Knife* must open him a Passage.

False Opinions on this Subject. This Disposition has plung'd ancient Anatomists and People into various Errors. It has made several Anatomists suppose a transversal Membrane in the Neck of the *Uterus*, on which they have bestow'd the Name of *Hymen*; and because in some Bodies they have found these *Caruncles* join'd by a Membrane, they have establish'd it as a certainty that all Virgins have it, and made it the real Proof of *Virginity*, being firmly perswaded that when it was not there, the Person must have been deflower'd by the entrance of something into her *Vagina*. I have sought for this Membrane in several Girls which I have open'd at all Ages, and who had undoubtedly been very chaste, but never found it; wherefore, with all the modern Anatomists, I believe it to be imaginary. The other Error is popular: Those, who by reason of this Obstacle, cannot consummate their Marriage, have sometimes believed that the Points were tied; for some affirm, that when the Priest marries the Couple, one of those present, by tying a Knot on a Point,

prenou...

pronouncing certain words, stops the consummation of the Marriage; but 'tis very foolish to entertain such Notions. When a Marriage cannot be consummated, we ought not to hunt after any supernatural Cause, nor believe it owing to the Practices of Sorcerers, who have no power over any besides weak and too credulous Minds: The Deficiency is always Natural, and if we thoroughly search into its Cause, we shall find it either in the Genitals of the Man or those of the Woman, and sometimes in their Imagination.

Of all Indispositions, the most pressing is when a Girl, at her coming into the World, has not her *Vulva* perforated; it must be open'd with utmost expedition; but 'tis not ordinarily perceived before the second or third Day after her Birth, by observing that she is not wet; when the Operation is easier than at her Birth, because the Urine being issued out of the Bladder, and stopp'd by the Lips join'd together, pushes them outwards by the Tumour which it there occasions: And also the Skin being extended very tort, we see the Line where the Incision is to be made longways; so that taking the Pen-knife A, or the Incision-knife B, we cut the Skin which joins the Lips, and make an Aperture proportion'd according to the Shape and Size which it ought to have naturally.

The Greeks called the Lips of the *Matrix Pterigomata*, from *What to be Pteri, Wings*, by reason of their resemblance to them: When the closure is but in part, the Operation is less difficult, because the Aperture which we find already contributes very much to the finishing the separation; which is not often perform'd on any besides great Girls ready to be married. This Indisposition is call'd *Symphysis*, as well as that of the *Prepuce*, from *Sym, which signifies together, and phyein, to stick*. In order to perform this Operation safely, the young Woman must be laid on the edge of a Bed, her Legs downwards and extended wide, then with the little Dilator C, which the Operator holds in his Left-hand, and has before thrust into the Orifice which he finds before, he dilates the two Lips with the Pen-knife A, which he uses with his Right-hand. He separates the united Places by little and little, taking care not to cut either of the Lips; he must also be careful that the point of the Pen-knife don't touch either the *Nympha*, the *Caruncles*, or the *Clitoris*; if the Adhesion be at the upper Part, he must in cutting it draw the Instrument to him, and avoid too great precipitation. By this we see that this Separation is rather a Dissection than an Operation: The Cure consists only in applying to the superficial Wounds we have made, *Desiccatives*, which we fasten on the Lips by a Bandage shap'd like a double T, and the hindring their Re-union.

When the Obstacle is at the *Caruncles*, the Chirurgion must again go to work, by reason that it being impossible for the Yard to enter the Vagina, there can be no Conception: When the Closure is Improper, the Caruncles.

The impossibility of this Introduction is not discover'd 'till after Marriage, and 'tis on this occasion that People believe the Point to be tied, as I have already hinted: But the Cause being Natural, it must be sought for in a too close Conjunction of the *Caruncles*, which must be remedied.

Two sorts of these unnatural Conjunctions. This Conjunction is of two sorts; for either the *Caruncles* are tied together by membranous Fibres too strong to admit of their Separation, and then there is but a very small hole left in the middle for their Courses to run through, and through which the *Yard* cannot pass; or they are wholly closed by a Membrane strong enough wholly to stop the Aperture, and which, like a transversal Barrier, prevents any thing entering in, or coming out of the *Vagina*: These two Obstacles, though different from each other, are not to be remov'd any otherwise than by the Hands of a Chirurgeon.

How to distinguish one from the other. These Indispositions are not ordinarily communicated to a Chirurgeon, before several ways have been try'd to break thro' this Obstacle; and after the Husband and Wife are utterly tir'd and exhausted by many vain Attempts: The Chirurgeon then discovers the true Cause, by touching with his fore-Finger the *Caruncles*; if they are *Fibres* which tie them, he will find the end of his Finger enclosed as in a Ring; but if it be occasion'd by a Membrane, he will find no Aperture.

Instances of these Indispositions, and the inconveniences which attend them. You ought not to suspect these Indispositions being really such as I have described them, 'tis a truth which several Chirurgeons can attest: I have seen some my self, and amongst others a young Lady lately married, who was several Months without being able to consummate her Marriage, and had never had that Satisfaction without the help of Chirurgery. *Fabricius of Aquependente* relates two Instances which confirm what I have advanc'd: The one is of a Servant-Maid which several Scholars could not Deflower, and who, after having shock'd all their Vigour against the Ligatures of her *Caruncles*, was forc'd to have recourse to him. The other Example is of a Girl, who, being wholly imperforate, could not discharge her menstruous Terms, they being detained by a Membrane which join'd the *Caruncles*, and intirely lock'd up the Passage, which occasion'd a pressing weight in the *Vagina*, accompanied with insupportable Pains; he made an Incision lengthways in that Membrane, from whence issued out a great quantity of black and stinking Blood, which gave the Patient ease, and he perfectly cured her. There is also an Author who has written a Treatise in Latin, *de Imperforatis*.

Ways of separating the *Caruncles*. We are now to shew how to separate these *Caruncles*. The Woman then being laid on the edge of the Bed with her Thighs open, we separate the Lips of the *Matrix* and the *Nympha*, in order to discover the *Caruncles*; we cause the left Lip and *Nympha* to be held by an Apprentice, whilst with the left Hand we hold the other Lip and *Nympha* distant from it: Then the Operator

Operator takes in his other Hand the Incision-knife D, holding it by the back, and with it makes four Incisions, one at each space betwixt the *Caruncles* in order to disengage or unbri-
dle them, in such manner that these four small Incisions to-*Their dis-*
gether compose the Figure of St. *Andrew's Cross*, or the Let-engage-
ter X, by reason that the *Caruncles* are situate one above and
the other below, and the two others *laterally*. The *Carun-*
cules thus freed from their Ligatures separate, and leave an
Aperture large enough for the entrance of the Yard, which is
the end of this Operation.

When a Membrane intirely stops the *Vagina*, the Woman is *How to*
situated in the same Posture, and with a mounted Lancet E, *pierce the*
we make one only Aperture longways in the Membrane, such *Mem-*
an one as *Fabricius* made in the Imperforate Girl; the Blood *brane*
detain'd in the *Vagina* presses this Membrane outwards, and *which*
facilitates the Aperture. The largeness of these Incisions can-*sometimes*
not be determin'd, that depends on the Prudence of the Chi-*joins them.*
rurgeon. If we should consult the Caprice of some Husbands,
we should make them very small; but if we regard the Ad-
vantage of the Women, they should be rather large than small,
in order to their more easie Delivery.

I find our Authors to prescribe four different Operations to *Four Ope-*
be perform'd on the *Matrix*; they are first the *excision of the rations on*
Nympha; secondly, the *Amputation of the Clitoris*; thirdly, *the Matrix*
the *Extraction of the Cercosis*; and fourthly, that regarding *describ'd by*
Hermaphrodites. These Operations are so seldom practis'd, so *Authors,*
that they may be retrench'd from the number of the others:
But yet I thought it not improper to instruct the young Chi-
rurgeon with regard to them, because he ought not to be
Ignorant of any thing relating to his Profession, and that some
extraordinary occasion of his Performing them may offer.

The *Nympha* are long and flat membranous Bodies, situate *Cutting off*
in the *Grand Fissure* at the external Orifice of the *Matrix*: *part of the*
'Tis affirm'd that they sometimes grow to that degree, that *Nympha.*
they hang out of the great Lips, when whatever exceeds their
natural size ought to be cut off. To this purpose having laid
the Woman on her back, and holding the Lips asunder, we
take one of the *Nympha*, from which we cut with the Scissars
F, the superfluous part, holding it fast with the *Forceps G*;
Then we perform the same Operation on the other, taking
care not to cut more off than we did off the former, and
not to cut them too near their Roots, because the use of the
Nympha is by their extension to administer means for the en-
largement of the external Orifice in the delivery of Women;
which they cannot do if they are wholly cut off by reason
that the cicatris'd Scars will not stretch.

If the *Clitoris* does not extend outwards beyond the Bounds *Amputati-*
which Nature has prescrib'd it, there is no need of Operation, *on of the*
but sometimes it grows to that degree as to become as big *Clitoris.*
and

Pretext
for this O-
peration.

The He-
morrhage
stopt.

and long as a Man's Yard; this happens frequently to the *Ægyptian Women*. The *Europeans*, who have this part larger than other Women, are call'd *Fricatrices*, because they may abuse it, and pollute themselves with other Women; which has made way for its Amputation, in order to deprive Women of a continual excitation to Lasciviousness: But there are very few who will submit to this Operation; for if a Woman be chaste she will not abuse it; and if debauch'd, she will not voluntarily lose a part which contributes to the Pleasure she enjoys in her Debauchery. But if a Chirurgeon is oblig'd to retrench this part, he must take it in his Left-hand in order to cut it off with the Curve-knife H, as close to its Root as he can, avoiding the touching the *Urethra*, or the *Lacuna* about the *Clitoris*, which, if these are hurt, will occasion an involuntary Emission of Urine, or of the Liquor separated by the Glands near the *Clitoris*. This Operation is not so dangerous as may be imagin'd, because what we cut off is no more than a superfluity. Nothing but Blood issues from the Wound, which may surprize the Chirurgeon: But if he lets the Vessels perfectly empty themselves, and lays on the Wound the large Pledget I, cover'd with *Astringent Powders*, the *Plaster K*, a thick *Bolster L*, and the *Bandage M*, which fastens the whole, he will soon stop the Flux of that Liquor, by reason that the Vessels press'd betwixt the *Os Pubis* and the *Bandage*, cannot spill any more of it.

Extirpati-
on of the
Cercosis.

What we call *Cercosis* is an excrescence of Flesh, which growing out of the Orifice of the Matrix, fills and stops it; 'tis sometimes so long as to resemble a Fox's Tail; which occasions that Name to be bestow'd on it, which is deriv'd from *Kerkin*, to deceive, because the Tail of that Beast serves to deceive other Animals. This Flesh is very like that of the *Polypus*, and is accordingly separated in the same manner; that is by extirpation, pulling it out with the *Cranes-Bill Forceps N*, or by a Ligature made close to its Root with the Thread O, or by Incision, cutting it quite off with the Curve-knife H, or the Pen knife A. It depends on the Chirurgeon to chuse which Method he finds most proper to remove this Flesh, and besides to manage himself with all necessary Circumspection in the consumption of its Roots, and procuring its cicatrizing.

Instru-
ments to
extirpate
this Flesh.

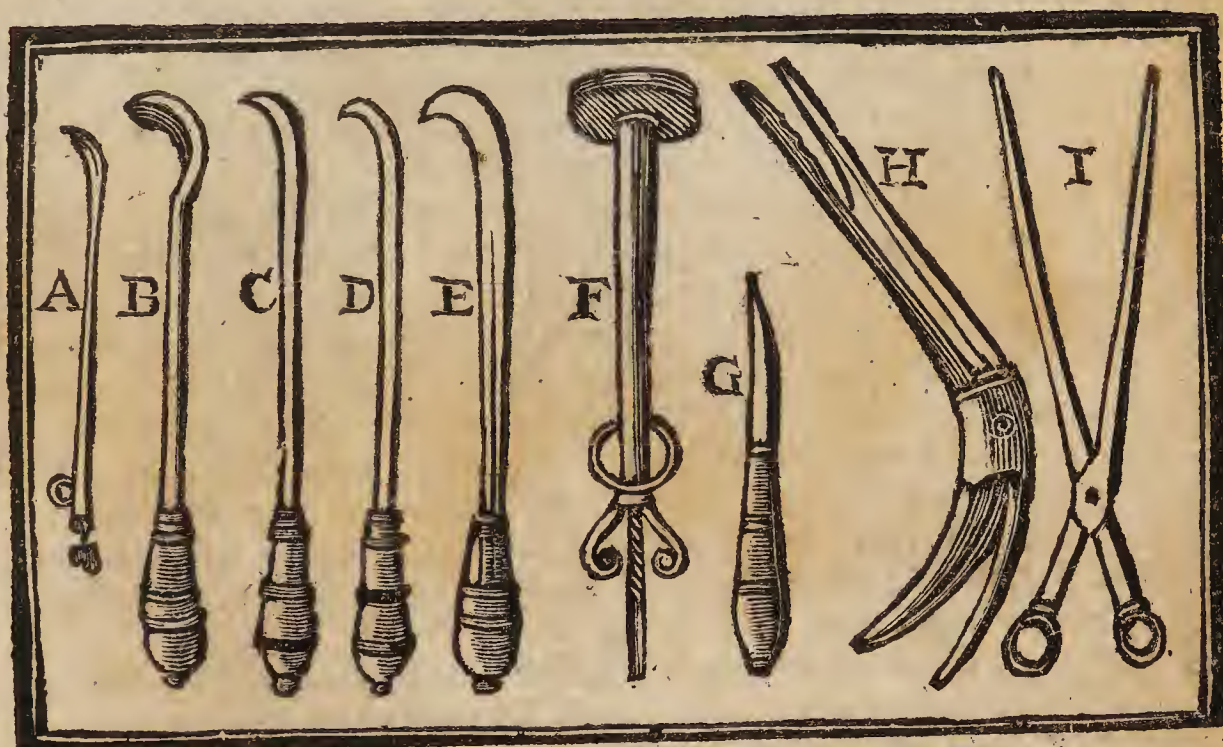
Four sorts
of Herma-
phrodites.

The Name of *Hermaphrodites* is bestow'd on those who at their Birth wear the Ensigns of both Sexes: 'tis deriv'd from *Hermes*, that is *Mercury*, and *Aphroditis*, which signifies *Venus*, that is to say *Man and Woman* together. Of these there are four sorts. First of all, those which are really Men, having the Male Parts in perfection, and the Female imperfect. Secondly, those who on the contrary are truly Women, and Men only in an imperfect degree. Thirdly, those who are
neither

neither Men nor Women, but imperfect in both Sexes. Fourthly, those who are perfectly both Men and Women, and are equally enabled to make use of the genital Parts of both Sexes; in which case the Laws leave to their Option what Sex they please to determine for; but after that absolutely forbid the use of the other. We cannot prescribe the Operations necessary to these sorts of Dispositions, which are almost all different: But can only tell you that the Chirurgeon's Duty consists only in removing what is useless, retrenching what he shall judge superfluous, and clog or prevent the Functions of those Organs, whose use ought to be interdicted, in order to render others more vigorous.

Usual Practice with regard to them.

FIGURE XIX. Of the DELIVERY of WOMEN.



THE Delivery of Women is commonly perform'd by Matrons, to whom we give the Name of *Midwives*, 'tis nevertheless comprehended in the number of Chirurgical Operations, and no Man that pretends to be a Chirurgeon can pretend to understand his Art, without being acquainted with all that relates to the Art of *Midwifery*. But Chirurgery is of so vast an extent, that 'tis difficult for any one Man to be perfectly Master of all its Parts; whence 'tis that the delivery of Women is fall'n into the Hands of their own Sex, as the Diseases of the Bones are into those of Quacks and Bone-setters, and those of the Eyes, Teeth and Stone, into those of various Operators, who apply themselves to no more than one of these Diseases solely.

A Chirurgeon not to be ignorant of the Art of delivering Women.

Modesty,

Indiscreet Modesty, the Virtue of the Sex, has much contributed to
Modesty of the introduction of Matrons into this Practice, there being
Women. some Women so scrupulous on this head, as to chuse rather
to expose themselves to be deliver'd alone, than disco-
ver themselves to Men; but at present they are almost all con-
vinc'd of this Mistake. The Misfortunes which they have seen
happen by the Ignorance of those on whom they depended,
have satisfy'd them of the necessity of having recourse to Chi-
rurgeons who alone are able to assist them, especially in an in-
finite number of Accidents which are above the Knowledge of
Midwives.

Six Cases I shall not here pretend to enlarge on all whatever relates to
in which the Art of Delivering of Women, which would oblige me to
the As- repeat all that Monsieur *Mauriceau* has said: He has so well
sistence of treated that Subject, that I cannot do better than refer you to
a Chirur- his Book, which will prove a safe and sure Guide in all Parti-
geon is ne- culars relating to the Diseases of Pregnant and Childbed-Wo-
cessary to men: In short, nothing can be more instructive on this Head
the Delive- than his Books: The four Editions of them at *Paris*, and all
ry of Wo- those which have appear'd in foreign Countries, are so many
men. Evidences of their Excellencé, and shew us that he has far ad-
vanc'd the Art of delivering Women.

My Design is not therefore to treat of this Subject in its
whole extent; but only to instruct our young Chirurgeon what
he must do in the most pressing Occasions; for perhaps he
may be daily call'd to the assistance of Women in hard La-
bours, who require the Chirurgeon's Hand to save their Lives.
I reduce these Cases to six, which are; first, the Extraction of a
false Conception; secondly, the drawing out of the After-birth
when it remains behind; thirdly, to deliver a Woman of a
Mole; fourthly, to deliver a Woman in case of loss of Blood;
fifthly, to turn the Child when it presents any other part be-
sides the Head; sixthly, to extract a dead Child.

By what we When a Chirurgeon is call'd to a Woman who labours un-
discover a der a continual loss of Blood, he must examine the Cause; if
false Con- she is seiz'd by intermitting Pains, and clots of Blood issue
ception in forth, 'tis certain that there is a false Conception, for if it were
the Matrix. only the Woman's Terms detain'd, the Blood would run out
of the Vessels. The Chirurgeon must inform himself how long
the Woman has been pregnant, in order to judge of the bulk
of the false Conception; as also whether she have before had
any Children; for if it be her first Pregnancy she will suffer
much and a long time, by reason that the Matrix not being
yet open'd, she must undergo the more Pain to give issue to the
Body which it contains, which being soft is not capable of
forcing a great Extension. Tho' the Pains and Clots of Blood
discover to the Chirurgeon that there is a false Conception, he
is yet more assur'd of it by the touch; he finds the internal
Orifice of the Matrix a little open, and introducing his Fore-
finger

finger he feels the exotic Body, which he must draw out as soon as possible. Having then slid in one Finger, he turns it in the Orifice, in order to dilate it more than it already is, and to get in another, and then a third, if he can without Violence, with which he takes hold of the false Conception, in order to draw it out by slow Degrees. If he cannot get hold of it at first, after having turn'd his Finger around it, to loosen it from the Matrix, he leaves the Woman to repose a little, and in order to see whether the Hemorrhage continue; for frequently it ceases when the Embryo has no more Life remaining, that is, when 'tis wholly disengaged from all the Vessels of the Matrix; when we expect it to come out of it self, or that it should be driven out by the least Effort of the Woman, as when she offers to go Stool. But if the Flux of Blood continue to Excess, the Woman may die, before the false Conception come out. In order then to deliver her, with the small Dilator, mark'd A, the end of which we introduce into the internal Orifice, we must gently dilate that Orifice, in order to procure the issuing out of the false Conception, which is done better with this Instrument, than with the Fingers: If after this Dilation the Fingers cannot yet get hold of this exotic Body, we take the *Cranes Bill Forceps*, marked B, the end of which we slide along our Finger, 'till it reach the exotic Body, which we grasp with this Instrument, in order to its Extraction, taking care that we are not mistaken, and that we don't lay hold of some part of the Matrix, instead of the false Conception. The Drinks which the Midwives give to drive out these exotic Bodies are vain, when there is nothing presses for-wards, and pernicious in case of Loss of Blood, because they augment the Flux. On these Occasions weak Broths, which afford but a little Nourishment, are better given every half hour, because that passing expeditiously into the Veins, they repair the lost Blood, and by keeping up the Circulation, prevent the Patient's dying.

The Woman is no sooner deliver'd, than she must be freed from a Mass of Flesh call'd the *After-birth* or *Placenta*, and that before the Ligature be made on the Navel. I have elsewhere hinted, that the Navel-string must be expeditiously tied, for fear, lest by deferring it too long, the Child may lose a great deal of Blood through the Umbilical Arteries, whose Mouths are open'd by their Disengagement from the After-birth. But the Chirurgeon remedies this Inconvenience, closing the Navel-string by turning it around his Fingers, which prevents the Blood issuing out at those Arteries; by which Means he has time to deliver the Woman without prejudicing the Child: On the contrary, if he should any longer delay the Extraction of the After-birth, the Matrix closing will not allow him to perform it with the same Facility, as immediately after the Child is come out of it. The Chirurgeon, closing the Navel-string,

Several
Motions
which re-
lieve the
Patient.

Cause of
the second
breaking of
the Navel-
string.

Precaution
to be used
in the
drawing
out of the
After-
birth.

We ought
to get out
all the
Parts of the
After-
birth.

Necessary
Injections
after the
Extraction.

vel-string, must partly wrap it around two Fingers of his Left-hand, and taking it with his right, as near the After-birth as he can, he must gently draw out the *Placenta*, and by easie Motions loosen it, in order to disengage it, if it is not before wholly freed from the Womb. If we oblige the Woman to blow into her hand, keeping it shut, if we make her cough or sneeze, if she presses downwards as tho' she were at Stool, if we cause her to hold her Breath, if she puts her Fingers into her Mouth to provoke her to vomit, or if the Nurie, with the Palm of her Hand, gently press the Patient's Belly, rubbing it from the top downwards; all these different Agitations help the issuing out of the After-birth, which must not be drawn out too roughly; which will occasion one of the three following Accidents, either the breaking of the Navel-string, a Loss of Blood, or the drawing out of the Matrix. By what Means soever the Navel-string happens to be broken, whether by pulling too strongly, the *Placenta* being too strongly fix'd to it, or being bulky and *scirrhus* did not follow the Navel-string, or the Child being dead, and the Navel-string putrified, it easily broke; it must be drawn out as soon as possible, by reason that the continuance of this exotic Body in the Matrix, may occasion terrible Accidents.

The Chirurgeon must pare the Nails of the Fingers of his Right-hand very close, which he also anoints with Oil or Butter, and engages in the Fund of the Matrix, thrusting in at first two or three of them to make way for the Passage of the rest of the Hand: He will there find the After-birth, which he will easily distinguish from the Matrix, tho' but little versed in Midwifery, or has but read Anatomists concerning these Parts. If the *Placenta* is perfectly loosen'd, he grasps it in his Hand, and brings it away without Pain; and if it yet adheres to the Matrix, it must be dextrously separated by gliding the side of the Hand betwixt the After-birth and the internal Surface of the Matrix, in which we sometimes succeed without much Fatigue, in the same manner that we separate the Parts of a kneaded Cake: But if it sticks fast, the Separation must be made slowly and gently, taking Care that we don't scratch the *Uterus*. Mr. *Manticea* advises rather to leave some small Portion of the *Placenta* sticking, which usually issues out with the *Lochia*, than to tear the Matrix too much, which may draw on a dangerous Inflammation: But yet we ought to endeavour to get it out intire, in order to shew it to the Company present, and by that Means avoid all the tatling of the good Women, who on these Occasions frequently talk without Reason. If the After-birth stays sometime in the Matrix, and begins to putrifie, which happens when the Child has been long dead; we must, after having drawn it out, make Injections prepared with *Barley*, *Agrimony*, and *Honey of Roses*, which cleanse and carry off what by its Continuance has incommoded the Matrix.

trix. To perform this, we make use of a *Syringe* peculiar to Women, having its Pipe crooked and pierced at the end like such Pots as Gardens are water'd with.

The Mole is a fleshy Substance much harder than the After-birth: It fills the Fund of the Matrix, to which 'tis stuck by several small Vessels which convey Nouriture to it, wherefore it has neither Navel-string, nor After-birth; from which, like an Infant, it can receive any Nutritive Juice, which must consequently come immediately from the Vessels of the Uterus.

Of these there are little, midling and great ones. The first Differences are small Bodies, of a carneous Nature, which some Women of Moles, void after their Courses, or which follow their Flux of Blood; their Con- so that they are not really Moles, but Clots of Blood, which substance and by their Stay, in the Body, coagulate and harden. The mid- Shape. ling ones are of a harder Substance, and redder, shap'd like the Gizzard of a Fowl, and about the bigness of a small Egg; this is what we call a false Conception, because 'tis said, that in the Egg descended from the *Ovarium* to the Matrix, there were not sufficient Principles to form a Child, the Conception remain'd imperfect, and the Result is only a little Mass of Flesh which is commonly cast out of the Matrix, betwixt the second and third Month of the Woman's Pregnancy. The great Moles are Masses of Flesh, or Collections of small *Vesicules*, which are fastened to one another by little Stalks, like those of Grapes, which occupy the whole Cavity of the Matrix, and keep it extended as tho' it contain'd a Child, with this Difference, that the Mole swells it more equally, and does not so much encline it to a Point, as a Child does. The Woman impregnated with a Mole, has no Milk in her Breasts, feels nothing move; and Signs of Moles. when she lies down on one side, the Mole falls to it like a great heavy Bowle. The Woman is more incommoded with it, than with a Child, by Lassitude in her Thighs and Legs, by Difficulty of Urine, and by a weight which she feels at the bottom of her Belly, caused by the Mole's drawing down the Matrix by its Ponderosity. These light Indispositions in the beginning become insupportable afterwards, which oblige the having recourse to a Chirurgeon, to be delivered of it. He procures Two ways its coming out two ways, by endeavouring to make the Wo- of deliver- man her self to drive it out, or attempting to extract it by ing the Wo- manual Operation. It being the Chirurgeon's Duty always to man of begin with the most gentle Means, before he proceeds to those them. of a harsher Nature, if the Woman is neither afflicted with a Fever, or Loss of Blood, he may give her a somewhat violent Purgative, and sharp and stimulating Clysters, which he may several times reiterate, in order to excite Pressures, which di- Namely by late the Matrix, and make way for the Mole; he may make Medica- use of Butter to rub the internal Orifice, to render it more ments and supple and dilatable: He may try emollient Injections, bleeding manual O- of peration.

of the Foot, or a gentle Bath, according as he shall think fit. If the Mole is but of an indifferent Bulk, and does not stick very fast, these Remedies may drive it out; but if it is of an excessive Largeness, and sticks very fast, it requires the Chirurgeon's Hand. In this case, after having par'd his Nails, and rubb'd his Hand with Oil or Butter, he must introduce it into the Matrix of the Patient, who ought to be laid on her Back on the edge of the Bed; and gently gliding it betwixt the Uterus and the Mole to disengage the latter, beginning at the Place which is loofest, he pursues his Course in the same manner 'till 'tis intirely separated, without engaging the Matrix; and the Chirurgeon must proceed in the same manner in the Extraction of an After-birth remaining in the Matrix, after the Rupture of the Navel-string. But if the Mole be so big, that it cannot come out, the Operator must make use of the *per-edg'd Crotchet*, mark'd D, with which he must draw it out, if it be solid enough for him to take hold of it; or he may cut it in two or more Parts, in order to get it out by bits, when he cannot otherwise succeed. It must be observed, that Moles generally come out about the eighth Month of the Woman's Pregnancy, and that they rarely continue two or three Years, or more, as several Authors pretend; amongst which number, is *Ambrose Paré*, who says that a Pewterer's Wife carried one seventeen Years.

Observation on the coming out of Moles.

How to treat a Woman with Child, labouring under an Hæmorrhage.

Signs to distinguish the Menstrual Flux from an Hæmorrhage.

When a Chirurgeon is called to an impregnated Woman who has a *Hæmorrhage*, before he proceeds at all, he must examine its Cause, in order to discover whether it be a Menstrual Flux, or a real *Hæmorrhage*. There are certain Signs, by which we may discover the Difference betwixt the one and the other; the *Menstrual Flux* runs by little and little, and without Pain, it comes at its regular Times, and ends after a short space of Time, as two or three Days; it is not accompanied with Clots, nor is it excessive. But the *Hæmorrhage* comes with Pain, and almost always suddenly, the Blood flows out in great abundance, and continues so to do without Relaxation; for if it seems to cease for some Moments, the Blood, in the Interim, does not less issue out of the Vessels, when falling into the *Vagina* it clots; these Lumps coming to be drove outwards, the Blood again begins to run out more than before; so that without help, and a speedy Delivery, both Mother and Child will perish. You ought not to be surprized, that I talk of Women with Child having their Terms, of which we have so many Instances, that 'tis out of doubt. Some Women have them only the first Months, others void something 'till the fifth or sixth Month, and there are yet others from whom they run during the whole time of their Pregnancy; which very frequently deceives Women; whence it is that they don't certainly know whether they are with Child or no, nor when they conceived. I know a Lady of the first Quality who has had twelve Children, and yet

yet has always had her Terms regularly during her Pregnancy.

When the Flux is barely of the Terms, no more is necessary than to leave the Woman to Rest; but when 'tis an *Hæmorrhage*, the Chirurgeon must examine whether it proceeds from the Fund of the Matrix, or from the Vessels of the Vagina and internal Orifice. The way to be convinc'd of this, is to feel with the Finger, whether the internal Orifice is dilated; and if in introducing it into that Orifice, we advance so far as the Membranes of the Child, 'tis a certain Sign that the Blood comes from the Fund of the Matrix; but if, on the contrary, that Orifice is close shut, the Blood infallibly escapes from the Vessels which moisten that Orifice and the Vagina: In which Case the Chirurgeon has no more to do, than to oblige the Woman to keep her Bed, bleed her, separate her from her Husband for some time, and give her no Medicament, for fear of exciting or augmenting by that means the *Hæmorrhage*. Several Women have gone their due Time with their Children, tho' the Blood which flow'd from them has been sometimes accompanied with Clots. When the Blood proceeds from the bottom of the Matrix, 'tis always because the After-birth is wholly or partly separated, and it never re-joining, 'tis absolutely necessary that the Woman be delivered. This Division may proceed from three Causes; from the too great Plenty of Blood in the Mother, by the Navel-string's being wound about some part of the Child, which stirring, tears the After-birth, and forcibly loosens it from the Matrix; or lastly, by some Fall or Blow which the Mother may have received: From what Cause soever the Loss of Blood proceeds, nothing but the Birth of the Child can possibly save either the Mother or her Fruit. If yet the Blood issues forth but in small quantities, if the Evacuation is not continual, if the Woman has sufficient Strength, and if no other ill Symptoms attend her, we may wait the time of her Delivery without advancing it, by reason that the Blood moistening the Matrix, insensibly dilates it, and makes room for the Child to come out, when 'tis a pure Effort of Nature, which rarely is at a Loss for proper Means to compass her Ends. But if the Blood issues forth in large Quantities without Interruption, as though it streamed from the Aperture of a large Vessel, or the Patient falls into a *Syncope*, or *Convulsion*, her Delivery must not be any longer deferred; whether her time be expired or not, whether she have any Labour-Pains, or not, there is no other way left to save her Life.

These Cases are very prejudicial to a Practitioner. If on the one side he reflects on what he has to fear with regard to himself, he knows that he hazards his Reputation; for if the Woman dies in her Delivery, or a little while after, for want of a sufficient Stock of Blood to maintain the Circulation, the

Publick then never fails, tho' unjustly, to lay the blame at his Door: And if on the other side he looks on the Woman, he knows that she must be delivered, or die; whence it is that some Practitioners in this Art, as much as is possible, avoid this perplexed *Dilemma*. Yet Christian Charity ought to balance us, and without any cautious Reserve what we ought to do, prevail on us generously to chuse that of relieving the Patient. But before he begins, the prudent Chirurgeon securely shelters his Reputation under his Prognostic; and to that purpose he calls together the Relations and Friends of the Patient in an adjacent Chamber, and remonstrates to them her dangerous condition, acquainting them that the only way to save her Life, is to deliver her, tho' at the same time he will not answer for her Life; but delivering may recover her from a Death, which is unavoidable if she be not delivered. This, the Chirurgeon immediately, without any Loss of time, causes the Woman to be laid athwart the edge of the Bed, her Legs wide extended, and held bent at the Knees by two Persons, a third continuing behind her to prevent her shrinking backwards at the time of the Operation. Then after having greas'd his right Hand, he introduces it into the *Vagina*, then advances first one Finger, afterwards two, and lastly a third if he can, into the internal Orifice of the Matrix, with which he dilates it by gentle and slow Degrees; if the Membranes of the Child are not open, he breaks them with his Fingers, which makes way for him to touch immediately, and turn it, in order to draw it out by the Feet. If the Child is under eight Months, the Feet generally present first, it not having then turn'd its Head towards the Passage, and then 'tis easily loosen'd, by pulling it by the Feet, which afford better hold than any other part; but if the Face, Neck, or an Arm offer first, the Chirurgeon gently repulses it, in order to search for a Foot, which he draws out, and holds in his Left-hand, whilst he endeavours to find the other Foot. When he has gotten them together, he pulls them with a warm Cloth, that they may not slip in drawing, provided the Child be well turn'd, that is, the Face downwards; for if it be upwards, he turns it, that the Chin may not be in danger to be detained by the *Os-pubis* at the Moment it comes to its Passage: When the Child has proceeded as far as the *ensiform Cartilage*, he slips in his Hand right forwards, in order to extend the Child's Arm along the right side of the Body; and that done, does the same to the other Arm; which done, the Child is stopped by nothing but the Head, which is the last and most difficult to get out. The Chirurgeon must not pull too hard, for fear of separating it from the Body, which sometimes happens: Nor ought he to suffer the Child to remain long in that Posture, that he may die under it; which Mischance happened to the Son of a Prince through the Fault of the Midwife. He must therefore call in some Body to hold the Woman up, whilst he glides

His Prognostic to be made to the Relations.

Posture of the Patient.

Manner of drawing out the Child which offers differently.

to find the Os-pubis.

Precaution when the Head is stopped in the Passage

around the Head, in order to disengage it by little and little, and puts the middle Finger of the other into the Child's Mouth, to prevent the Chin closing it, and immediately obliges the Person which holds up the Child's Body to draw it out: The Child is pull'd out this way with much more Ease, than if the Chirurgeon did not help by his two Hands disposed in that manner. The Child being in the World, the Chirurgeon easily compleats the Delivery of the Woman, by reason that the After-birth, in these sorts of *Hæmorrhages*, is always separated from the *Matrix*: As soon as the Woman is delivered, her Flux *The Flux of Blood ceases after Delivery.* begins to decrease, and soon after wholly ceases, because the *Matrix* in its closing again stops the Orifices of the Vessels from whence the Blood flow'd, and which were kept open by the Distension which the Child occasion'd, when in this Organ; so that if we should not draw out the Child, the Blood would issue out at these Orifices to the last Drop. Notwithstanding all the Fatigues which attend the laying of Women in these Circumstances, the Chirurgeon has sometimes the Chagrin to see the Patient expire soon after her Delivery: Five or six hours being past after her Delivery, and she having had time to take some *Conjunctivum* or *Chicken-broth* to repair her lost Blood, she is safe. But if she ends her Days half an hour, or an hour after her being brought to Bed, 'tis because she had not Blood enough remaining in her Vessels to preserve its circular Motion: And that Humour, which is the Principle of Life, no longer dispensing on all sides its Nutriment and Heat to the Parts, the Woman grows extinct, like a Candle that wants Tallow to feed its Light. What ought to comfort the Chirurgeon in such a Case is, that he knows he has no Reason to blame himself, and that he believes he has done his Duty, and run the Risque of what may be reported concerning his Conduct.

When the Child's Head does not present to the Passage, the Delivery is term'd Laborious, because the Infant not being in its natural Situation, can hardly come out of the *Matrix* without the assistance of a Chirurgeon or Midwife: It may present it self in an infinite Number of Postures; but the worst of all is, when one hand comes out first. When a Chirurgeon knows how to relieve a Woman in these sorts of Labours, he is undoubtedly able to help them in all others, that being the most difficult of all; for which I give it the preference in treating of it before all others, and determine to shew the ways of succeeding in it. If the Midwives would call us to help them when they feel a Hand of the Child, as soon as the Waters are penetrated, we should turn the Child with more ease; but often they don't desire our assistance 'till they have try'd to deliver the Woman by drawing the Arm outwards; which leaving engag'd in the *Matrix* renders the Delivery more laborious. The Chirurgeon is then called on such an occasion.

*Posture of
the Patient.*

*Observa-
tions of the
different
Postures of
the Child.*

*How to se-
cure the
Child's
Foot.*

occasion, after informing himself how long the Hand has been out, begins with feeling the Pulse of the Child, to discover whether it be dead or alive; if by the beating of the Pulse he finds it alive, he ought to Baptize it, throwing Water on that Hand, by reason he cannot be responsible that the Child shall come forth alive. Having taken this precaution, he causes the Woman to be laid on her Back on the edge of the Bed, her Legs widely separated from each other, and held by two Women, and prepares himself to turn the Child in order to take it by the Feet; because he must not pretend to be able to save it any other way; for he would sooner pull off the Arm of the Child than draw it out by that Member. When an Arm is in the Passage, the Child lyes athwart it, with its Heads on one and the Body on the other side of the Uterus, in which Posture it is impossible it should ever come forth: It must ~~then~~ be turned, in order to perform which the Chirurgeon examines whether the Child's Hand be the Right or the Left, and considers which of his own Hands he ought to make use of; he also observes whether the Palm of the Child's Hand be upwards, which shews him that it lyes on its Back; for if it was downwards, the Infant would lye on its Belly. These Observations having determined him, he rubs his Hand with Butter or Oil, gently introduces it into the Matrix along by the Child's Arm, which he grasps near the Shoulder in order to push it towards its Head, and obliging it to move out of the Passage, he makes way for the Feet to approach in order to find them the more readily, and secure them. He must as soon as he has got one of them draw it forth, which will make the Child of it self turn it self to a favourable Situation: But sometimes, before searching for the other Foot, 'twill be proper to tie the first with a Ribban, because if the Child should withdraw it whilst the Operator is employ'd in quest of the other, he would be obliged to search for the first a second time. The Chirurgeon having got one Foot, slides his Hand up to the top of the Thigh on the same side, whence he passes to the other, slipping his Hand to the Foot which he brings to the Passage to the first, in order to draw them both out, holding them with a warm Cloth that they may not slip. If the Child lyes on its Belly, he continues drawing of it out immediately; but if on its Back, he turns it in proportion to the advances he makes in drawing it out; and in all other Particulars he manages himself as I have already said. If the Arm is so far driven out, or is so large as not to allow room for the Chirurgeon to introduce his Hand, and there appear certain Signs of the Death of the Child, *Am- brose Paré* advises us to cut off that Arm; to which purpose the Chirurgeon draws it out as far as he can, cuts the Flesh with an Incision-Knife, then breaks the Bone, which is as brittle as a Raddish; or cuts it with his Incisive-Pincers a little above the Flesh which he has cut, that the end of the Bone

Bone may not hurt the *Matrix*. Mr. *Mauriceau* yet says, that we ought not to cut off an Arm unless driven to it by the last Extremity; but when the Chirurgeon is forced to it, he advises him to twist it two or three turns, in order by that means to break the Ligaments of the *Omo-plata* or *Shoulder-Blade*: That then the Separation would be easily performed by reason of the laxity and small Consistence of the Parts, and being done in the Joint, it is not possible to be attended with any ill Accident: But he will have us firmly assur'd that the Child is dead, which we may be certainly assured of, if feeling its Pulse we don't find any pulsation. Many antient Authors tell us, that we ought to reduce to their natural Posture, all those things which are sited contrary to Nature, that is, that we ought to reduce Infants in the Matrix, or its internal Orifice, to lye with the Head fore...; but daily Experience shews us that this is not always practicable. 'Tis impossible to bring the Head into the passage, because there is no hold to be taken of it; but 'tis not very difficult to draw the Feet thither, because we can grasp and guide them whither we please: Wherefore we shall do better to follow Monsieur *Mauriceau*'s Opinion, who affirms that whenever we find the Child present it self in a wrong Posture, what part of the Body soever it offers, the most expeditious and safest way is to draw it out by the Feet.

There are Signs which discover the Death of a Child in the Matrix: The principal of which are, the Woman's feeling a dead great weight at the bottom of the *Hypogastrium*, her Belly swelling, and the Child falling like a Bowl to that side on which she lyes; if touching the Navel we find no manner of Pulsation, if an Arm or Leg being come out we find the *Epidermis* easily separate; if blackish, stinking and cadaverous Humidities issue from the Matrix; and lastly, if the Mother no longer perceives it to move: Then the Chirurgeon has no room left to hope for help on the Child's part, who, like a mass of Lead, is wholly unable to make any effort in order to get forth, unless it be by its own weight, which renders the Labour very long and painful. Nor ought we to expect much from the Mother, whose Pains on this occasion are so feeble and slow, that they are not sufficient to bring forth the Child: Nay, it happens sometimes that she has none, which lays the Chirurgeon under a necessity of helping her, without which she cannot be Delivered. If the Child is in a proper Posture, he ought to rouse the Pains which are as it were asleep, which is done by strong and sharp Clysters, which stimulating the Intestines excite Strainings, which may facilitate the coming forth of the Child. I am not of Opinion to oblige the Patient to take Potions, because if composed of easie Medicaments, they are of no effect, they are old Wives Remedies; and if on the contrary they are prepared of strong and violent Drugs, they are dangerous, and may occasion cruel Symptoms, and frequently

The Reduction to the natural Posture an ill Practice.

Danger of the Mother in this Case

How to Deliver her.

*Inconveni-
ency to be
avoided.*

*Use of the
Crotchet to
draw out
the Child's
Head.*

*How to
draw out
the Child
when stop-
ped by its
Shoulders.*

Death it self. If these Clysters have not their expected Effect, the Chirurgeon must go to Work, and endeavour by Manual Operation to draw out as soon as he can the dead Child. To perform which, he must cause the Woman to be placed in the Posture already mentioned; and if it be long since she made Water, he must introduce the excavated Probe, A, anointed with Oil, into the Bladder to evacuate the Urine, which filling that Organ, will incommode the Delivery; then sliding his Right-hand into the Matrix, if he does not find the Child's Head too far engaged in the Passage, he pushes it back; and sliding his Hand under the Child's Belly, he searches for its Feet, in order to turn it, and bring it forth pursuant to the precedent Article, taking especial care not to pull too hard when the Head sticks, for fear of beheading the Child. which, by reason of its Putrefaction, may happen, if it be drawn with too much Precipitation. What Precautions soever are taken by able Practitioners of this Art, it may yet happen that the Child may be deprived of its Head, by reason of its being putrified: In which Case we must not leave the Head to continue in the Matrix, where 'twill remain alone. To perform the Extraction, he makes use of the *blunt Crotchet B*, with which he fixes on one side of the Head, whilst he rests his other Hand on the same Crotchet to conduct it forth. But if the Child's Head presenting first, is so far advanced and engaged in the Passage, that it cannot be shoved back, without offering too much Violence to the Woman, the Chirurgeon must endeavour to bring it out in that Posture: And the Head being round and slippery, by reason of the Humidities in which it has been moisten'd, he cannot take any hold of it with his Hands, but must have recourse to the *Crotchet*, marked C, which he thrusts as far as he can betwixt the Matrix and the Child's Head, guiding that Instrument with the Palm of one of his hands, with the Point turn'd towards the Head, which it must fix upon in a solid Place, that it may not slip from it: Being thus fixed, he brings forth the Head, by applying his Left-hand to the other side of it opposite to the Crotchet, in order to help to disengage and conduct it directly through the Passage. If his hand be not sufficient, he takes a second Crotchet, mark'd D, which he introduces in the same manner as the precedent, and fixes on that side of the Head where his Hand was: With these two Crotchets he draws forth the Child equally, how big soever it may be. If after the Head is come forth, the Child sticks by the Shoulders, he disengages them by slipping one or two Fingers of each Hand under the Arm-pits, in order by that Hold to draw the Child wholly out. When he is obliged to cut the Child in pieces, either by reason the Passage cannot be sufficiently dilated, or the excessive Bulk of the Child's Parts, he makes use of the *Crotchet E*, shap'd like a crooked Knife.

This

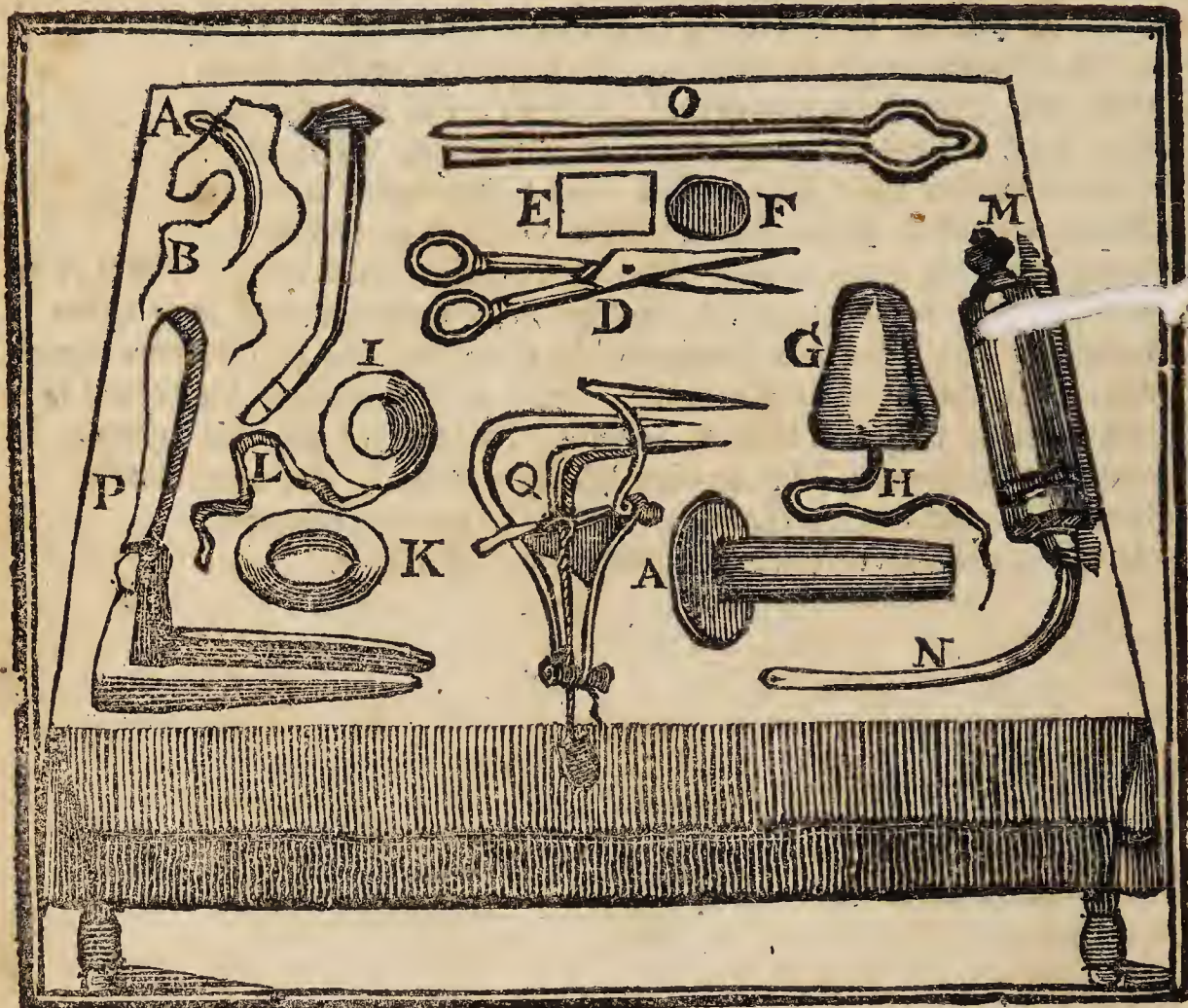
This is the Method always practised: But Mr. Mauriceau has invented an Instrument, which he calls a *Tire-tête*, that is, a *Head-drawer*, which he believes to be incomparably better than the *Crotchet*; he gives it that Name from its Use, which is to fix on the Child's Head when fast stuck betwixt the Bones of the Passage. You see it here marked with the Letter F, with the pointed Instrument expressed by G: 'Tis fitted up with all its pieces, and fastened to the Child's Head. I refer you, for a more ample Instruction, to its Inventor Mr. Mauriceau, who shews the manner of using it. But whether we make use of a *Crotchet*, or of an *Head-drawer*, we must be fully satisfied that the Child is first dead: For what a dismal Spectacle would it be to find a Child yet living, and almost expiring after 'tis drawn out? The Chirurgion must then avoid falling into this terrible Misfortune, by not using these Instruments before he has incontestable Proofs of the Child's Death; even when 'twould be much better to make use of his Hands only, if they can suffice, without the Use of any Instruments whatsoever, 'till the very last Extremity. The two Instruments, one mark'd H, and the other I, are sometimes of great use to the Practitioner of the Art of Midwifery.

What is to be taken care of with regard to Instruments.

M 4

FIGURE

FIGURE XX. CONTINUATION
of MIDWIFERY.



The two
principal
Symptoms
supervene-
ning hard
Labours.

WOMENS Labours are generally followed by so many grievous Accidents, that 'twould be difficult to particularize them all. I shall mention only two, because they require Manual Operation. One is the Rupture of the under and forked part of the *Rima magna*, or *fossa Navicularis*; and the other the *Procidentia Uteri*, or falling out of the *Matrix*.

The Name of Forked is given to the lower part of the *Vulva*, from its being of that Figure. It makes the Separation betwixt the Grand Fissure, or *Rima magna*, and the *Anus*. It frequently happens, that by hard Labours this Part is broken; so that the two Apertures, that of the *Matrix*, and that of the *Anus*, are run into one. This afflicting Indisposition would be accompanied with several ill Symptoms, if we did not reunite the divided Parts; the Woman would scarce be able to hold

hold her Excrements, which would issue out by both these Apertures; her Husband must be disgusted at her in this miserable Condition, in which she is so disagreeable even to herself; wherefore the Chirurgeon must remedy this Dilaceration by some Stitches of the Needle. To this end, he takes a *curve* Of the O-Needle, A, threaded with a coarse *wax'd Thread* mark'd B, peration to which he holds in his Right-hand, whilst with the left he be perform- makes use of the *curve Pipe* C, to support the Part through ed. which he is to run the Needle; the Suture must consist of two or more Stitches, pursuant to the length of the Rupture, he cuts the Thread with the *Scissars* D, at each Stitch, and knots it on a *small long Bolster* E, which will serve for all the Stitches. Before sowing the Wound, it must be wash'd and well cleans'd with warm Wine; and before closing the Stitches, the Chirurgeon must apply to the lacerated Part the *white Peruvian Balsam*, or in defect of that *Arcaus's Balsam*, in order to conglutinate the Wound; to that side joining to the *Vulva*, the *Dressing* Chirurgeon applies to the Wound the *astringent Plaister*, F, as of the well to keep it re-united, as to defend it from the Urine, whose Wound. Acrimony will excite Pain, and hinder its re-union. The Patient must be obliged to keep her Thighs close together till she is perfectly cured, and to prevent their Separation, the Chirurgeon makes use of a small Band, call'd a Garter, like that us'd to those cut for the Stone.

Scarce any Indispositions are more frequent than the Descent and falling out of the *Matrix*, an infinite number of Women are afflicted with it, and this sort of Diseases is more difficult to cure, by reason that out of Modesty, Women suffer long before they complain. We must distinguish betwixt the *Descent* and the *fall* of the *Matrix*; the first is, when the *Fund* of the *Uterus* descends from its Place, and falls into the *Vagina*; and the second, when the same falling lower, come intirely forth; so that the Descent is properly no more than a Relaxation of the Body of the *Matrix*, whilst the falling is a *Precipitation*.

All Descents of the *Matrix* are not equal, for the *Uterus* of- *Variety of* ten proceeds no farther than to occasion a weight in the *Va- Descents* *gina*, at other times it descends as low as the *Caruncles*: And *and Fal-* then with the Finger, we feel the internal Orifice very near; *lings*. and yet at other times descending yet lower, the internal Orifice appears without the Privities.

The *Fallings* or *Precipitations* of the *Matrix* are of two sorts; one is, when the *Matrix* falls out without its Fund, being turn'd the wrong side outwards; in this Case we see the internal Orifice at the Extremity of a great round fleshy Mass, which is the Body of the *Matrix*: The other is, when that part is not only fallen out, but when its Fund is intirely turn'd inside outwards, in such manner that it seems to be nothing but

but a great piece of bloody Flesh hanging betwixt the Woman's Thighs.

*Causes of
all these
Indisposi-
tions.*

'Tis always a Relaxation of the large Ligaments of the Matrix which permits it to descend or fall, and never a Rupture of the Ligaments, as some have imagin'd. A thousand Accidents cause these Relaxations; I shall not recite them here; but content my self with hinting only, that the principal of them proceed from hard Labours. We mean only in this Place the Accidents which depend on some Diseases, for they may absolutely proceed from a Wound with a Sword, or some other Instrument separating the Ligature.

In these Indispositions the Women feel an extreme Pain in the Region of the Reins and Loins, they complain of a heavy weight at the bottom of the Belly, which is often accompanied with a difficulty of Urine, and they require speedy help, if they are willing to be cur'd; for the older these Infirmities grow, the more difficult 'tis to compleat their Cure, which consists only in two particulars, first to return the Matrix to its natural situation; and secondly, to continue and fix it there.

*Ways of
replacing
the Ma-
trix.*

The simple descents of the Matrix don't require a great Operation; but first of all we must examine the Cause of them. If the *Uterus* is only tumefied by the Suppression of the Terms, which renders it ponderous, the Chirurgeon must procure Evacuation; and if by reason of the weakness of the Ligaments it descends too low, it must be fortified by Astringents and Corroboratives boil'd in thick Wine, in which the Chirurgeon dips his Bolsters which he applies to the Reins and Belly, after having reduced the part to its Place; which is sometimes accomplished by barely making the Woman lye down on her Bed, or by laying the Palm of his Hand on the lower Venter, and pushing up the Matrix, or by introducing into the *Vagina* a *Wax-Candle* Δ , excavated like a Pipe; with which we instantly return it to its natural Place. Some affirm the Husband's Yard to be a more proper Instrument than a Wax-Candle; but they are mistaken, for the Natural Sympathy betwixt these two parts prevents their quitting each other easily: The Yard thrusts back the Fund of the *Uterus* to the place where it ought to be, but as soon as that Member is withdrawn, it follows it, and falls to the same place, or lower than it was before the Action.

*Pessaries
to keep it
in its
place.*

In the fallings of the Matrix, in which the *Fundus* is not turn'd inside outwards, the greatest difficulty does not lye in restoring it to its place, but in keeping it there when replac'd. The most certain Remedy to be made use of against its falling out again, is a Pessary which must be introduc'd into the Neck of the *Uterus*, in order that by sustaining the bottom of that Organ, it may keep it in its ordinary Situation.

The

The matter of which *Pessaries* are made, is commonly Cork, that they may be the lighter; they are dipt in melted Wax to fill up their Cavities, that their rough unevenness may not hurt; they may be made of Silver, and will prove more proper. They are of two different Figures, some are Oval as that you see mark'd G, shap'd like an Egg: Its bulk and length are proportion'd to the Neck of the Matrix into which it is to enter, and remain after it's introduc'd; to it is fasten'd a small String H, which has two uses, one to draw it out when we think fit, and the other to fasten it to a Ribbon, or Tape, which goes round the Body, to hinder it from falling to the Ground, if the Patient happens to walk Abroad, which these *Pessaries* are apt to do, particularly in the time of the Menstruous Flux. There are *Pessaries* of other Shapes, some are circular, such as that represented by the Letter I, and others somewhat inclining to Oval, as K, shap'd like a small roll: In the middle they are pierc'd thro', and a hole left large enough to allow Passage to the Womens Terms, and which admitting the internal Orifice into its Cavity, retains it in its place, and supports it; they are made a little large, to the end that entering with a little force, they may the better stay in. One of these two stands in need of the String L to withdraw it; but the other wants none, the Finger being sufficient to pull it out at Pleasure. These *Pessaries* once placed, must not be drawn out on account of the Necessities of Nature, by reason that being provided with a hole, a free Passage is left for the Excretions of the Matrix; and if they are well made, they don't incommode the Woman that wears them, nor hinder her conversing with her Husband, and even being impregnated, as has frequently happen'd, because the internal Orifice may receive the ejaculated Seed. By means of these pierc'd *Pessaries*, with the *Syringe* M, whose Pipe N is bent (to facilitate the Patient's Syringing her self) may be made injections, which fortifie and cleanse the Matrix, so that for all these Reasons these last are preferable to the Oval.

Manner of applying these Instruments.

Use of Pessaries.

In the fallings of the Matrix, in which the *Fundus* is absolutely turn'd inside outwards, as we would turn a Purse, we must expeditiously thrust it in: And this Accident very frequently happening thro' the fault of the Midwives, who pulling the Navel-String too hard to get out the After-Birth, bring along with it the Fund of the Matrix to which it sticks: As soon as they perceive the *Fundus* to follow the After-birth, it must be separated; and the bottom of the Uterus restor'd, by thrusting it again into its place, which is then easily done, because the internal Orifice was extreamly dilated to let the Child pass out. But if the Midwife defers it, the Orifice closes by little and little, in which case 'tis very difficult to restore the *Fundus* to its place, and the Woman dies before she

Ordinary cause of fallings out of the Matrix.

Dangerous to defer reducing the Fund of the Matrix.

Manner of
performing
this Opera-
tion.

He is help'd, which I have seen happen. Nevertheless, if the Chirurgeon be call'd time enough to remedy this turning outwards of the Matrix, which he will discover by seeing betwixt the Woman's Thighs a sort of bloody *Scrotum*, he then begins by obliging the Patient to arise, and orders a Clyster to be administred, if it be long since she was at Stool: He then makes her lye on her Back, with her Buttocks rais'd higher than her Head, then after having with warm Wine and Water fomented all that's come out, he gently thrusts it back into its appointed place; if it is not to be got in without too much difficulty, he must make an *Embrocation* with Oil of Sweet Almonds, which will help the reduction, by rendring the Fibres of that Organ softer and more extensible. But if, notwithstanding all the Chirurgeon's endeavours, the Matrix cannot be got in again, either by reason 'tis much tumefied, or that it has been delay'd too long, 'tis in great danger of Gangrening in a little time. Some Authors advise us in this case to extirpate it, and assure us to have seen Women thus cur'd. But as for me, I shall believe the extirpation of the Matrix mortal, 'till I shall be convinc'd by Experience.

Extirpa-
tion of the
Matrix
too dange-
rous.

How to dis-
cover the
other Infir-
mities of
the Ma-
trix.

Conveni-
ences of
the Specu-
lum Ma-
trix.

The Orifices as well as the Neck of the Womb are liable to several Indispositions, which result from hard Labours; but they not requiring manual Operation, I shall not mention them, but leave them to the prudence of the Chirurgeon, who above all things ought to know them himself, and not rely on Women whose Relations are often not very exact. If the Infirmary is in the Neck of the Matrix, he must make use of the small Dilator O, which being introduc'd into the Vagina, will separate the Lips, and enable him to see the Infirmary, in what part soever of that sheath it is; but if there be any Ulcer at the internal Orifice which he would see, he makes use of the other Dilator with two Branches P, or of the third call'd a *Speculum Matricis* Q. It has three Branches, which join'd together, are gently thrust into the Neck of the Matrix, then turning the Screw R, they separate from one another, and by the space which they leave betwixt themselves, allow the Chirurgeon to take a distinct view of the internal Orifice; which, at first sight, will satisfy him of the Infirmities with which it is afflicted, and facilitate the application of necessary Remedies.

But, at present, the most able Practitioners of the Art of Midwifery content themselves with making use of only three Fingers of one Hand, which they engage one after another in the Vagina; with which, separating them by little and little, when they are all together introduced, they dilate this Passage triangularly and pyramidically as the *Speculum* shews it, and that as much as is necessary to perceive all that pre-
judices

dices the *Uterus*, which are as well discover'd by the Touch as by the Eyes, and that in a manner which less incommodes the Patient, and more instructs the *Chirurgion* than if he made use of an Iron Instrument, as is the *Speculum Matricis*, by the help of which we are not so well advertis'd when we are in danger of breaking some Fibres by Dilation.

The End of the Third Demonstration.





T H E
Fourth Demonstration
O F
Chirurgical Operations.

*The Operations performed on the Groins,
the Scrotum, and the Anus.*

And first of Hernia's.

GENTLEMEN,

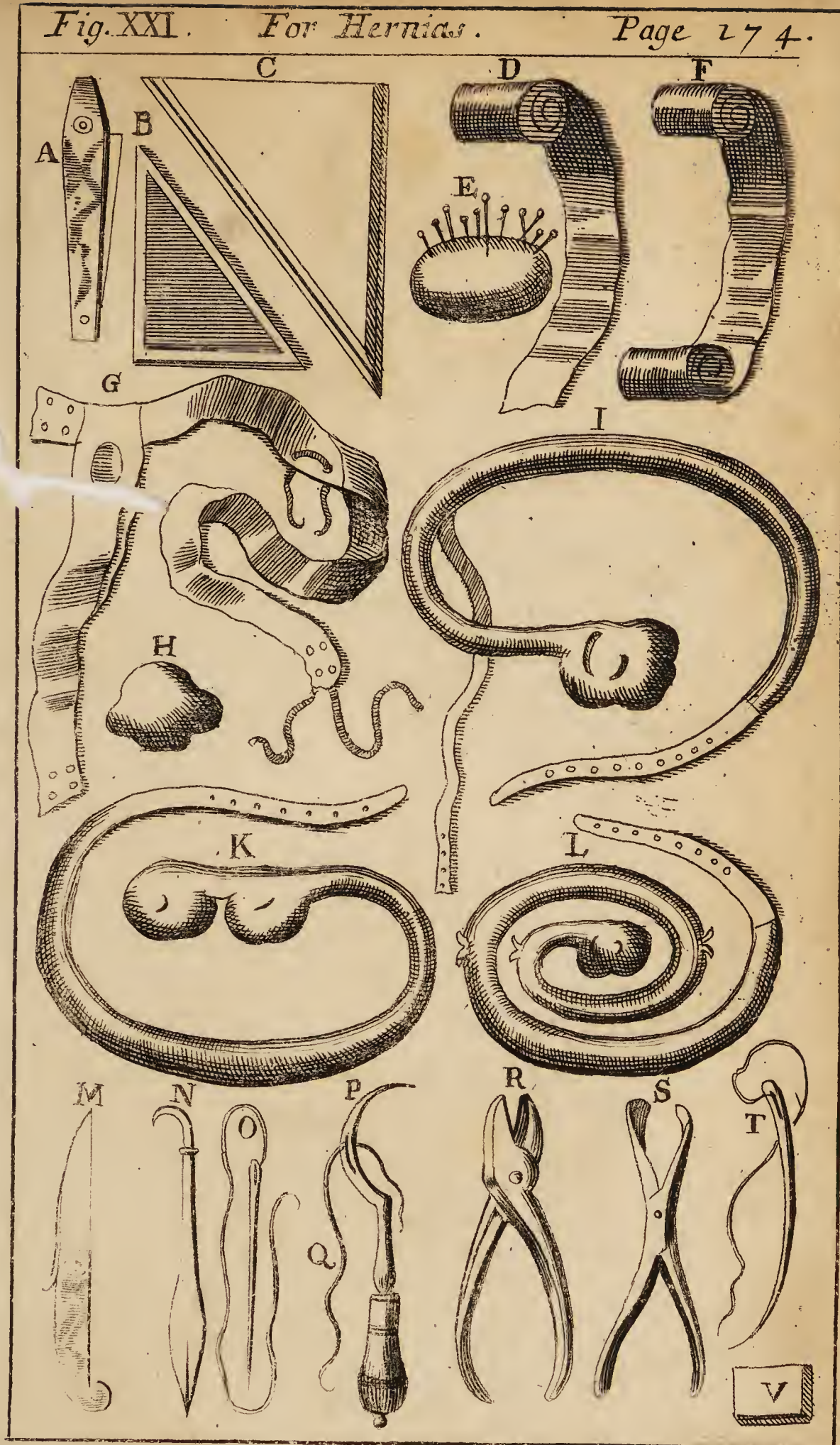
*Why the
Scrotum
and Anus
frequently
want the
help of Chi-
rurgery.*



HIS Demonstration will not be less charg'd than the rest, though I confine it to the Operations which regard the *Scrotum* and the *Anus*; for these two Parts, being the most common Sinks of the Body, are subject to an infinite Number of Diseases, which require all the Operator's Skill, as well as the Dexterity of his Hand, to Cure them.

*Hernia's no
new Disea-
ses.*

'Tis a mistake to believe that *Hernia's* or Descents are modern Distempers; for though we are commonly told that they were not formerly known, and that 'tis but within the compass of a few past Years that we have seen so many Persons afflicted with them, 'tis not only because they were little known to the Vulgar, but because the Ancients took care to hide them, most part of those who had them not daring to discover them to any Person. But after the Invention of very com-



commodious Bandages to repulse the Parts to their natural Place, and several Medicaments to restrain and fortifie the relax'd Fibres; and above all, since the *Prior of Cabrieres* came from *Languedoc* to the Court, and brought to the King several Secrets, which he said were infallible Remedies for many Distempers, amongst which he had one against *Hernia's*; those, I say, who before that time concealed these Infirmities, no longer made a scruple of discovering them, in hopes of a Cure by it.

The *Prior of Cabrieres* was a very charitable Man, who distributed many Remedies in his Country; he was no self-interested Person, nor pretending Quack, though very close, and made a Secret of every thing. The great Reputation which he acquir'd in the Province where he lived, render'd the Court curious to see him; he arriv'd there about the Year 1680, and had several Conferences with the King, to whom he imparted his Secret for the Cure of *Hernia's*, earnestly entreating his Majesty not to publish it 'till after his Death.

His Majesty kept his Word with him, though very much concerned to see the Publick frustrated of that Relief; but, without infringing his Promise to the *Prior*, he found means to ease those afflicted with these Infirmities; and influenc'd by a singular Goodness, resolv'd to take the pains of composing this Remedy himself, and to cause it to be charitably distributed to all those who ask'd it. To this end his Majesty commanded four or five sorts of Drugs, which he specified to his Apothecaries, to be brought into his Closet: And this Receipt consisting only in the mixture of Spirit of Salt with Wine, as you shall see by the Description which I will give you immediately, the King using only the Spirit of Salt, caused the other Drugs to be privately thrown away, and this he did in order to keep his Promise to the *Prior* inviolably.

'Twas then that we discover'd how many People were afflicted with *Hernia's*, by the great number of those who came to ask this Remedy. They address'd to the King's first *Valet de Chambre* in waiting, and gave him a small Note of the Age of him or her who wanted this Remedy: Some Days after which they return'd and receiv'd a little Basket, in which were three Bottles, of a Chopine or half a Pint each, full of this mixt Wine, which they took in one and twenty Days, as I shall shew you: There were also in this Basket proper Plaisters peculiarly adapted to this Infirmary.

Of those who have taken this Medicine, some have averr'd that they have been relieved and cured by it. Others have said it had no effect on them; which shews this Remedy, as well as all others, in different Persons to be of unequal Virtue, and that there are no infallible ones. I should yet advise the use of it; for though Bandage, assisted by the astringent Plaster, frequently proves sufficient to the Cure of this Indisposition,

'tis yet true, that Spirit of Salt mix'd with Wine cannot do any thing but good internally, by communicating to the Parts reduced to their Place, an Astringent essential to the Cure of these Infirmities.

The Distribution of this Remedy continued four or five Years, that is, as long as the *Prior of Cabrieres* surviv'd his discovery of it to the King. Immediately after his Death, the King publish'd the manner of taking it, with the Composition of the Plaister which must contribute to the efficacy of the Drink, to the end that all his Subjects might themselves prepare this Remedy against an Infirmary which is but too common, and here is a Copy of the Receipt printed by the King.

The Prior of Cabrieres's Remedy against Hernia's, publish'd by the King's Goodness. The Originals remaining in his Majesty's Hands.

The Dose of this Medicine is different, according to the Ages of the Patients, but the Preparation always the same, even for sucking Children, though Bandage alone was formerly used to Cure them. The manner of preparing and using it follows.

From two to six Years of Age.

Preparation of this Medicine, according to different Ages. Take of well rectified Spirit of Salt three or four Drops, mix it with a Spoonful or two of Wine, which you must make the Patient take every Morning fasting for one and twenty Days successively.

From six to ten Years of Age.

Take four Scruples of this Spirit of Salt, mingle it very exactly with a Chopine or half Pint of Red Wine, and order every Morning about the quantity of two Ounces, so that the Dose may continue seven Days, after which renew it, 'till the Patient has taken it one and twenty Days successively.

From ten to fourteen.

Take two Drams of the same Spirit of Salt to a Chopin of Red Wine, and mingle them.

From fourteen to seventeen.

Mingle two Drachms and an half of Spirit of Salt with half a Pint of Red Wine.

From seventeen, and during the Remainder of Life.

Pour five Drachms of Spirit of Salt into half a Pint of Red Wine.

A Receipt of the Plaister.

Composition of the Plaister. Take of Mastick in Lachrymis, half an Ounce; Laudanum, three Drachms; Three Cypress-Nuts well dry'd; Hypocistis, one Drachm; Terra Sigillata, one Drachm; Black Pitch, three Ounces; Venice Turpentine, one Ounce; New yellow Wax, one

one Ounce; Roots of Consolida Major or Comfry dried, half an Ounce. Pulverise those which ought to be pulveris'd, decoct them all, stirring them continually 'till they come to the consistence of a Plaister, to be used as follows.

Manner of curing Hernia's.

The Chirurgeon must be provided with a good Bandage, which holds very tight, and after having shav'd the place, apply one or two Plaisters if necessary: The Remedy must be taken Fasting, and the Bottle shook before the Wine be pour'd out of it into the Glass, after which it must immediately be taken: for the space of four Hours after which, the Patient must wholly abstain from either eating or drinking.

Qualities of the Bandage.

It must be taken twenty one Days without Intermission, but if it offends the Stomach, it may be omitted one or two Days.

What is to be observ'd

Whilst the Patient is taking this Medicine, he must wear a Truss Day and Night, and never sit, but always remain standing or lying, and walk much: He is restrain'd from riding on Horseback, in a Coach or Chariot, but must always go on foot or in a Boat, and avoid all manner of Excess either by the Mouth or otherwise.

during the use of this Remedy.

He must wear his Truss Day and Night for three Months after taking this Medicine.

He must not mount on Horseback 'till three Months after, and when he does, must still wear his Truss, because 'tis thought that the Parts necessarily require Confirmation.

The common Rule directs the Description of the Disease, before the prescribing a Remedy; but the History of the Prior of Cabrieres has drawn us into an alteration of that Method; and indeed it is not of any importance whither the Medicine against *Hernia's* be at the beginning or end of this Discourse, since either will be equally advantageous to the Publick.

The *Hernia's*, commonly called Burstings, Descents or Fal-lings of the Intestines, are Tumours in the Groins or Scrotum, form'd by the Intestine and Epiploon gliding into those Parts.

Of the Nature of

Hernia's.

This Description suits those *Hernia's* occasion'd by the Parts, but not those resulting from Humours; for there are several sorts of them, the distinction betwixt which we shall immediately fix.

All the Tumours of the Scrotum are either *Hernia's*, or *Im-*postumes. The first are of three Species, viz. the *Ente-*rocele, the *Epiplocele*, and the *Enteræpiplocele*; and the other relate to the five principal ones, which are the *Hydrocele*, the *Pneumatocèle*, the *Sarcocèle*, the *Cyrcocèle*, and the *Humerale*: So that some of these Tumours are real *Hernia's*, but resemble *Impostumes*, of this sort are the three first; and the other three are real *Impostumes*, but seem to be *Hernia's*, of which kind are the five last.

All these Diseases have each of them their Signs, which discover, and distinguish them from one another, and with which the Chirurgeon must be acquainted, in order to prevent his mistaking them, and direct him to apply the proper Operations to each of them: When I have examined them one after another, I will shew you the Operations requisite to their Cure.

Etymology
of Enterocoele.

I begin then with the *Enterocoele*, which Word is deriv'd from *Enteros*, which signifies *Intestine*, and *Kele*, *descent*; so that this Infirmary is a descent or falling of the Intestine, which we commonly call a *Hernia*.

Two sorts
of them.

There are two sorts of *Enterocoele's*, the one perfect, as when the Intestine falls into the *Scrotum*, when 'tis a true *Enterocoele*; and the other an imperfect one, which is when that Organ stops in the Groin, and produces a Tumour, or a *Bubo*, when 'tis call'd a *Bubonocoele*.

This Infirmary is always occasion'd by some violent Strain; it happens either by the Rupture or Dilation of the *Peritoneum*, whence we observe it in Children that have cried excessively, those Women who are in a very hard Labour, and Men which carry heavy Burthens, by reason that the Intestines being extremely press'd endeavour to escape in the Productions of the *Peritoneum*.

Hernia's frequently happen either by the Rupture, or bare dilation of the *Peritoneum*, as we have just hinted; when the *Peritoneum* is broken, the Intestine falls all at once into the Purfes of the Testicles, where it produces a great Tumour, but also returns to its Place with the same facility with which it fell; but when this Membrane only stretches and extends itself insensibly, the Intestine falls by slow degrees, gently gliding downwards by means of the dilation of the *Peritoneum*, which is the common *involucrum* of the lower Venter, and also frequently stops at the Groin, and does not fall into the *Scrotum*.

Of the descent of the Epiploon in the dilation of the Peritoneum.

The *Epiplocele* is a Tumour proceeding from the descent of a part of the *Epiploon* or *Omentum*, in one of the dilations of the *Peritoneum*; this word is compos'd of *Epiploon* which signifies *that fat Caul* which floats on the Intestines, and from *Kele*, *descent*.

The *Hernia* occasion'd by the *Epiploon* is neither so large, so painful, nor does it press downwards so hard as that caus'd by the Intestine. But yet I have seen one in a Youth at *Ver-sailles*, as big as a Fist, on which Mr. *Felix* and my self immediately perform'd the Operation, by reason the Part requir'd a speedy reduction, the Patient being afflicted with the same Symptoms which are caus'd by the Suffocation of the Intestine. We found the greatest part of the *Epiploon* enclos'd in this Tumour, and putrified by its long stay there, and we were oblig'd to bind, and extirpate it, as this Operation requires.

The

The *Enterœpiplocele* is an *Hernia* caus'd by both the Intestine *Hernia's* and *Epiploon*, which in this Case jointly quit their Place and fall compos'd into the *Scrotum*; the Etymology which I have represented to of the two you of *Enteroccele*, and *Epiplocele*, without any difficulty, will former. make you comprehend whence the Name of this compound *Hernia* is deriv'd.

This *Hernia* raises a larger Tumour than the rest, because produc'd by more Parts, and is besides more frequent, for when the Intestine slips down, the *Epiploon* which covers it, and which easily stretches, almost always accompanies it.

These three sorts of *Hernia's* happen equally on the right *Why the* and left sides, and sometimes on both together; some affirm *Epiplocele* that the *Epiplocele* falls oftner on the left than on the right *most fre-* side, because, say they, the *Epiploon* being fix'd to the bottom *quently on* of the *Scrotum*, descends lower on that side than the other, *the left* and consequently may more easily enter in the dilation of the *side*. *Peritoneum*.

The Causes of all descents are the same, *viz*, Rupture and Dilation: But there are Signs by which they are distinguish'd both at the time of their falling out, and that of their re-entry. The *Enteroccele*, or if you please, the Part which forms that *Proper* Tumour, bursts out impetuously and all at once; and returns *Signs of* in the same manner, when dextrously push'd back, and at its *the Infr-* entrance makes a murmuring Noise, which discovers that 'twas *mities*. the Intestine which was fall'n out: On the contrary, the *Epi-* *plocele* is slowly produc'd, and the *Epiploon* does not return to its place without Pain, but without any Noise. We know that 'tis an *Enterœpiplocele*, when after the reduction of the Intestine, which we know by the murmuring Noise it makes, the Tumour only diminishes, but does not wholly disappear.

In this Case the Chirurgeon deduces his Prognostic from *Whence the* two Particulars; the Age of the Patient, and the Nature of *Prognostic* the Descent: If he is a young Man, he may promise a Cure; *to be* but if advanc'd in Years, there is little hopes of Success in at- *drawn*. tempting this Disease: And accordingly we daily see Children and young People cur'd; whilst a Man once turn'd of Thirty is oblig'd to bear his descent the rest of his Life. When an *Hernia* is but small, or recent, and proceeds solely from dilation, 'tis curable; but when 'tis old, or large, and occasion'd by the Rupture of the Fibres, 'tis but very seldom cur'd: I have seen some as big as a Hat-block, which were incurable, and 'tis from such Descents, or Ruptures, that the common Notion arises that when a Man is once Bursten he can never be cur'd. Those who are afflicted with these Infirmities, which are most commonly call'd in *France Hergnes*, being almost always peevish and out of Humour, have imparted the name of *Hergneux* to morose and insociable People.

The Chirurgeon's Business is speedily to relieve the Patients afflicted with this Infirmary: The first thing which he is to

Manner of do. is to lay the Patient on his Back, his Head somewhat lower than his Buttocks, his Thighs and Knees half bent; then with the five Fingers of one Hand he grasps the Tumour, and gently pressing it, thrusts back the Parts which were fallen out of their Place: He must avoid all Precipitation, it being much better to spend a long time in the thrusting back the Parts, than to hurt them in the least by a hasty Reduction. As soon as the Intestine and *Epiploon* are restor'd to their Places, the Patient is freed from Pain: But 'tis not enough that the Operator has finish'd this Reduction, which the Patient himself frequently does: He must prevent its falling out again, and close the Passage for the future, if possible.

The most certain Way of compassing this End is by Bandage, without which we cannot hope for any Cure. Therefore one ought to be adapted to the Age and Sex of the Patient to whom 'tis to be apply'd. Observe, that in Burstings accompanied with Luxations, the Chirurgeon must begin with reducing the displac'd Parts, and then cut out Bands; for if he should begin with the Preparation of his *Apparatus*, the Patient would suffer by waiting for the Reduction, which would augment the difficulty, as well with regard to the Descents, as the Luxations which ought not in the least to be delay'd.

Of Dressing.

Of the Bandage.

We leave the Patient laid in the same Posture as when the *Hernia* was reduc'd. If he has any Hair on the Part, it must be shorn off with the Razor A, before the Application of the Plaister; then take a bit of Leather cut triangular B, in order to fit the Indenture of the Groin, and spread it with the Salve *contra Rupturam*, hereafter describ'd; then prepare the Bolster C, of the same Figure, but a little larger, because it must always reach beyond the Edges of the Plaisters, and have ready a Linnen Band D, about four Ells long, and of the breadth of two Fingers; these three Things thus prepar'd, the Plaister is to be laid on the Rings of the Muscles of the *Abdomen*, thro' which the reduc'd Parts pass'd when they burst out; then lay on the Bolster, which must be very thick, in order to press the harder, and next take the Band, one End of which place on the opposite Thigh to that on which is the *Hernia*. Then having roll'd it over the Belly and Groin which is affected, turn it about the Thigh on the same side, next remounting it betwixt the Testicles and the Thigh, roll it over the same Groin, making with it a sort of Cross, and guiding it to the Hip on the same side, run it circularly about the whole Body, in order to return and pass it over the same Hip where it began, and trace out the same Way describ'd by the precedent Circumvolution: Continue the Bandage in this manner to the end of the Band, which fasten securely where-ever it falls. It must be observ'd, that this Bandage ought to be a little tight, that it may hold well, and that we stick a Pin at every rolling or circumvolution which passes over the Bolster, as well for the

the fastening and securing the Bandage, as to hinder the falling of the Bolster when the Patient walks; to this end the Chirurgeon must provide himself with several Pins on the Cushion E; this manner of Binding is called the *Inguinal Bandage*, from *Inguen* which signifies the *Groin*.

When the Descent or Bursting is of both sides, after the *How to* reduction is accomplish'd on each side, the Chirurgeon lays on *treat the* two Plaisters, and two Bolsters of the same Shape as the pre- *Hernia on* cedent. He then takes the *Band* or *Roller F*, rolled at both *both sides.* ends, being six Ells long, and as broad as the former: He applies it towards the end in the middle of the *Spina Dorsi*, then guiding the two ends one towards the right, and the other towards the left, in order to make the circular Bandage, he draws them over the *Pubes*, and thence rolling each of them o *one of the Groins*, and surrounding the Thigh on its respective side, he returns or reascends above the same Groin where it crosses; then returning, both make a new circular Bandage, then they repass over the Groins, as they did the first time, which course is continued 'till the Chirurgeon comes to the end of his Band; this is called the *double inguinal Bandage*.

These Bandages, tho' simple, frequently cure Children; but *Practice* when they are at the Breast, or are not yet come to be clean- *with re-* ly, they must be chang'd every Day; the Chirurgeon then *gard to* shews the Person who has the care of the Child how to make *sucking* them, and if she does not suffer it to cry, she will cure it as *Children.* well as a Chirurgeon.

Elder Children which begin to go, require a firmer Ban- *The Mush-* dage; and to them we use that call'd the *Mushroom G*, which *room Ban-* has that name given it, by reason that its principal Part is *dage ap-* shap'd like a *Mushroom H*, which is made of *Pear-tree* or *Box.* ply'd to We apply the back of this Mushroom exactly on the right of *older Chil-* the descent, where it is stay'd by circular Bandage made of *dren.* Linnen or Fustian, when holding very fast the two ends which pass betwixt the Purfes of the Testicles and the Thigh, to prevent its slipping up, the whole being fasten'd by small Points or Laces, of a Size and Shape proportion'd to the Subject; if the descent is double, a second Mushroom must be apply'd, which must be fasten'd on the same manner with the former.

Those who are stronger and stir much, require a Bandage *Of Trusses* which holds yet faster; which occasion'd the Invention of those *for adult* of Steel, which we call *Trusses*; you see one mark'd I. They *Persons.* are made of a forg'd Steel Hoop, beaten, and flatted, which surrounds three fourths of the Body, and whole extremity, which is to be plac'd on the Descent, is enlarged in form of an Elcocheon, from whence it draws its French name of *Brayer*; this Steel Hoop is lined with Cotton, enclos'd in *Chamois* Leather, that it may not hurt the Body. And because

this Circle does not compass the whole Body, 'tis eked out with a Leather Strap provided with several little Holes to fasten it to the *Escutcheon*, where there is a Steel point, which entering one of the said Holes, closes it more or less according as is found necessary: Behind this Bandage is sewed a Branch made of double Cloth, which passing betwixt the Thigh and the Purse of the Testicles, is also fasten'd to the *Escutcheon* as well as the Strap.

The Em-
ploy of Her-
niary Chi-
rurgeons.

Several Persons at *Paris* employ themselves solely in the Cure of *Hernia's*, and the making of these Bandages, whence they are called *Herniary Chirurgeons*; they are admitted at *St. Cosme*, where they are obliged to make a sort of Master-piece before they work for the Publick: Some of them are very able Men, to whom even several Chirurgeons apply themselves for these sorts of Bandages; but in the Country there is no such Convenience; wherefore the Chirurgeon ought to be instructed in the Structure of these sorts of Machines, when he cannot have them from any Body else.

Reasons for
the diversifi-
ty of Trusses

Some of these Bandages have the *Escutcheon* broader, and others longer; the first are for those which are fat, and the second for lean Persons: Some have the *double Escutcheon*, K, made for those afflicted with the Descent on both sides. To conclude, there are Bandages, which, by the help of two or three Joynts, fold like a Pocket two foot Rule.

Conveni-
ence of
these Ma-
chines.

The Application of these Instruments is easie, those who wear them growing by Custom to take them off and put them on without any Pain. But one essential Circumstance must be observed, that is not to put on this Bandage before the Descent is wholly re-entred; for if a part of the Intestine or Epiploon should remain in the Groin, the Truss would bruise or hurt it, and draw on Pain, Inflammation, and perhaps a Gangrene.

An extra-
ordinary
Case to be
observed.

It sometimes happens, that from the Birth no more than one of the Testicles is descended into the *Scrotum*, the other remaining in the Groin, where it makes a small Tumour, which the Relations perceiving, apply to the Chirurgeon, taking it for a bursting. 'Tis his Duty to examine this narrowly; for if he should endeavour to force the Testicle into the Cavity of the *Abdomen*, or should press it by Bandage, he would cause horrible Pains, which might be attended with very mischievous Consequences.

Of Spring
Bandages.

There has been in our time invented a sort of Spring Bandages, L, so called from their having a Spring fastened to the *Escutcheon*, which pushes the Cushion against the Part on which 'tis placed. Those who make use of this sort of Bandages affirm, that the bending of the Thigh makes a deep Angle in the Groin, which prevents the common Bandage resting on the Descent, and that this Inconvenience is remedied by the Spring, which continually and almost always equally presses on

on that Place : Which was the Reason that the Prior of *Cabrières* forbad sitting, and ordered his Patients to keep themselves always standing or lying, in order to avoid the falling of the Intestine occasioned by the bending of the Thigh: But yet this new Bandage is scarce at all in use. 'Tis the famous *Blegny*, who is said to be their Inventor: That Name alone, which is but too well known, makes us sufficiently remember how indefatigable that Man was, and how many Attempts he made to establish himself in the World: To attain which end, having placed one of the principal Parts amongst those who impose on the Publick, I will here in a few Words give you his Story.

Having for some Years been Clerk of the Company at Saint *Cosme*, where he every Day heard Chirurgical Discourses in the Acts there performed, he believed he knew as much or more than the Masters which composed them: He then got a Privilege, lodged himself in the *Fauxbourg St. Germain*, and married a Midwife. He set up at his Habitation, Medicinal and Chirurgical Conferences, in which he sometimes advertised the Auditors of some Secrets of his own Invention; the Corners of the Streets were covered with Bills, which informed all *Paris* of *Elixirs*, *Perfume Boxes*, and *wonderful Coffee-Pots*, with which he pretended to do Miracles. He found access to Monsieur *Daquin*, first Physician to the King, who made use of him to describe the Remedy against Agues of Monsieur *Talbot*, an *English* Man, to whom the King gave a considerable Sum of Money to publish his Secret. He obtained of the Chancellor a Privilege, to cause to be printed every Month a Journal of all the extraordinary Events which happened in *Physick* and *Chirurgery*, as well in *France* as foreign Countries. But this Privilege, which another would have profited by, and which really was useful, he was deprived of, for abusing it to the writing of *Invectives* against, and lacerating the Reputation of Authors. He had obtained Leave to purchase the Charge of Chirurgeon in ordinary to Monsieur: But within a few Years after, his Character being known, he was ordered to desist. At last, very well knowing that the Art of Chirurgery does not content it self with Words, but requires real Performances, he imagined that he should better succeed in *Physick*: He then took out a *Diploma* for Doctor of that Faculty at *Caen*, and with the Character of Physician, stampt a Value on his Talent which he had of deceiving the World. He undertook to revive an Order of the Holy Spirit, formerly established at *Monpellier*, he wore the Cross, caus'd himself to be called the *Chavalier de Blegny*, and sued those at Law, who he believed to have usurped the Revenues settled on that Order. But all these ways proving unsuccessful, he hired a House at *Pinconr*, in order to establish a sort of Hospital for foreign Patients, where, for a certain daily Sum, they were to be lodg'd, nurs'd, dress'd and physick'd: But the King being inform'd,

that it was only a Pretext to cover the Debaucheries acted there, granted a Warrant to seize him; he was then clapt into *For-Levêque*, and some time afterwards conducted to the Castle of *Angers*, where he remain'd Prisoner for seven or eight Years: About four Years since he got out, and after having run to *Italy*, came and died at *Avignon*. He was a very well made Man, always very neat in his Dress; he spoke and wrote fluently, was very studious, inventive and laborious; and if he had made a good use of the advantageous Talents which Nature had endued him with, he had not come to such an unhappy End.

Description of an experienc'd Plaister for Hernia's. I promis'd you the Description of the Plaister which must be applied to *Hernia's*, which as it runs in *Charas's Dispensatory*, is as follows: I recite it here to save you the trouble of looking for it elsewhere.

Take and flea Eels, and having wash'd the Skins in Lime-Water, decoct them over a slow Fire, in a clear Lye made of common Ashes, 'till they become wholly dissolv'd, and reduc'd to a Glue, which strain thro' a Hair-sieve: After having weigh'd out four Ounces, put that quantity in an Earthen-glaz'd Pot, to which three Ounces and an half of Gum-Ammoniac dissolv'd in Vinegar, strain'd and thicken'd, with three Drachms of Salt, otherwise call'd Sugar of Lead, the same quantity of the Calx of Tin, as well as a like weight of the Hæmatites or Blood-stone, reduc'd to a fine Powder; boil all these Ingredients over a slow Fire, incessantly stirring them with a wooden Spacula 'till they acquire the consistence of a Salve, adding at last half an Ounce of distill'd Oil of Myrrh.

Experiments made at the Invalides of Mademoiselle Devaux's Plaister.

Tho' we have the Composition of several excellent Plaisters for the cure of *Hernia's*, there appear'd at Court a Woman nam'd *Mademoiselle Devaux*, Widow to one of our Chirurgeons at *Paris*, which lived near the *Croix du Tiroir*, and pretending to have found amongst her Husband's Papers the Composition of an infallible Plaister for *Hernia's*, address'd her self to Messieurs *Fagon*, *Felix*, and *Bodin*: They mention'd it to the King, and she was sent to the Invalides to make Experiments of her Plaister. On the favourable Report which was made of it, which testified that several had been cur'd by it, the King gave her four hundred Pistoles, and Monsieur *de Barbesieux* five hundred Livres Pension to cure the Soldiers in the Invalides which should be found to be afflicted with this troublesome Infirmary.

I don't give you the Composition of this Plaister, because I don't know it; but it was no more effectual than all the rest invented for *Hernia's* unless sustain'd by Bandage.

Several ancient Operations on Hernia's at present left off. Our Ancestors, not content with depending on Bandages for the Cure, or at least palliating relief of *Hernia's*, have sought after it in Chirurgical Operations, amongst which they believ'd they had discover'd three or four sorts, each of which is

is worse than the other, and all of them are abandon'd by good Chirurgeons, and at present are practis'd by none but pretending Quacks, who are not much concern'd at the consequences of their Operations. I will shew you the manner propos'd for their performance, not out of design that you should reduce it to practice, for I am certain you will condemn them; but because a Chirurgeon must be acquainted with both the Good and Ill of his Profession, in order to follow the first, and avoid the last.

He who believes himself to have met with the best success, says, that with the *strait Incision-knife M*, the Chirurgeon must make an Incision lengthways in the Groin, following the road made by the *Spermatic Vessels*; that with the *Myrtle-Leaf N*, (whose end is like a Lancet to Lance the Gums, to make use of in case of Necessity) having discover'd the Dilatation of the *Peritoneum* which encloses them, it must be sewed thro' the whole length, in manner of the Skinner's or Furrier's Suture, with the *strait Needle O*, threaded with a Wax-thread: By which means 'tis pretended that this too much dilated Production is contracted, and the slipping out of the Intestine hinder'd. The Inventor of this Operation stil'd it unblameable, *First Operation*, because it preserves the Vessels and Testicule intire: He also calls it the *Royal Operation*, because that conserving the Parts, it leaves the Testicle at liberty to perform its Function, which *is Inconveniencies*. is to furnish the King with Subjects. I have never seen this Operation perform'd, nor do I believe the Practice of it to be easie; for I cannot imagine that 'tis possible to contract the Dilatation of the *Peritoneum* with the same facility that we can the Finger of a too large Glove. *Thevenin* himself, who has given us the Description of this Operation, owns that 'tis difficult and subject to a Relapse.

Others are persuaded that 'twould be better to proceed to an Operation call'd the *Golden-Stich*, but this is not charg'd with fewer Difficulties than the Precedent; you shall be Judges of them. They will have the Patient laid on a Table with his Head lower than his Buttocks, which done, they oblige us to make a transversal Incision in the Groin, deep enough to discover the *Spermatic Vessels* contain'd in the lengthening Extension of the *Peritoneum*, and yet avoiding the hurting them, then to take the Curve-Needle *P*, provided with a Handle, and threaded with *Gold-wire Q*, in order to pass thro' below the Vessels and the Production or Dilatation; when having unthreaded the Needle the Gold-wire is to be turn'd two or three turns with the *Pincers R*, taking care that it does not press too hard on the Vessels, and that it allow the course of the Blood in their Cavities: The Extremities of the Thread are to be cut with the *Incisive Forceps S*, and turn'd back in order to be left in the Wound, care being taken that the part of the Wire turn'd backwards, don't hurt the Parts; they will have

us endeavour to cicatrise the Wound with the Gold-wire in it, telling us that the said Wire often falls of it self, and that the Wound being cicatris'd the Patient is perfectly cur'd of the *Hernia*.

Lead-wire Those who substitute Leaden-wire instead of that of Gold, *may be sub-* believe they do better, alledging that Lead is of a kindly Na-
stituted in- ture with regard to Men, and that not being so sharp as Gold-
stead of Wire, it may remain in the Wound without hurting it.
Gold.

Both these Wires are dislik'd by some, who will have us *And Hemp-* make use of a course Hempen-thread waxed, to be pass'd
en-thread twice around the Vessels without pressing them hard, and that
instead of having tied them, and cut the Thread near the Knot, we leave
Lead-wire. it in the Wound at least 'till it be Cicatris'd.

The Asserters of these Operations affirm, that the Gold or
Two Acci- Leaden-wires, or Hempen-thread closing the Production of the
dents to be *Peritoneum*, hinder the Intestine or *Epiploon* from falling down
fear'd in there, and therefore ought to be practis'd on all *Hernia's* oc-
these Ope- casioned by Dilation. But since we are allow'd to reflect on
rations. their Operations, we take the liberty to mention two very
mischievous Consequences which may possibly attend them,
whether the Wire be left in, or comes out of the Wound.

The First. The first is, that in any Strain the Intestine finding the Rings
of the three Muscles of the Abdomen sufficiently dilated to al-
low it to burst out, may stick betwixt the Ligature and the
Rings, and there occasion an imperfect *Hernia*, and also a Suf-
focation; and tho' the Ligature should be made as near the
Rings as is possible, as these Authors prescribe, violent Efforts
may yet press this Ligature, and forcing it downwards, leave
the Parts at their Liberty to fix themselves in the Lodging
which they have already made.

Second In- The second Accident which will infallibly happen if the
conveni- Wire come out of the Wound, is that the Vessels must have
ence. been cut, and consequently their Communication with the
Testicle being wholly interrupted, the Man is Gelt and depriv'd
of the Power of Generation, without any absolute necessity for
it; which renders these Operations pernicious, and ought to
prevent the Chirurgeon's ever putting them in Practice.

Another The Asserters of these Operations have farther refin'd on
Operation. them, and there are some who, in order to spare the Incision
made to discover the Production of the *Peritoneum*, make use
of the *Crooked Needle T*, threaded with a course Hempen-
thread well wax'd, and having pass'd this Needle thro' near
the Rings, below the Production or Dilation of the *Peritone-*
um, keep the two ends of the Thread on a small Bolster V,
and close or tight it from time to time, 'till the said Thread
Reason why has cut thro' all that is grasp'd, and falls of it self: This Ope-
condemn'd. ration is not less to be blam'd than the precedent ones, by
reason it cuts and destroys the Vessels which render the Testi-
cles fit for Generation.

But

But notwithstanding all this, a Person of the first Quality lately introduc'd at Court one of these Operators, and honoured him with his Protection, brags of him as of a Man of incomparable Skill in the cure of Burstings: But in strict Justice such Empirics really deserve an exemplary Punishment.

Some Authors tell us, that we may cure Descents by Chirurgery two ways, first by preserving the Testicle, and secondly by taking off that part: With regard to the first they propose four or five Operations, which I have just shewn you; but can they be said to preserve the Testicle by depriving it of its Functions? *Fourth Operation as much to be condemn'd as the rest.*

The second is by taking off the Testicle, which they do in the following manner. They make an Incision in the Groin, which discovers the Vessels, and passing the Finger below it, they force out the Wound the Testicle wrapt up in its Membranes, they then tie the Vessels as near the Rings as possible, and then cut them half a Finger's breadth below the Ligature, leaving the end of the Thread long enough to draw it out when Nature separates it, in curing the Wound the ordinary way. This Method certainly prevents the *Hernia* ever being again produc'd; but the number of those Men is very small who would be cured of this Infirmary at the expence of the loss of their Testicles.

The *Itinerant Operators* are dextrous in the separating of these Organs without the Spectators ever perceiving it, they make the Ligature of the Vessels, before they draw the Testicle out of the *Scrotum*, and with their little Finger run behind the Vessels which they have cut, they force it out, and hide it in their Hand, in order to steal it into their Purses unseen: We have known one of these Operators who fed his Dog with nothing but Testicles, that Animal always lying under the Bed, or under the Table near his Master, waiting for the luscious Morsel, with which he was regal'd immediately after its extirpation, unknown to the Spectators, who would have sworn that the Patient had all his Parts. *Address of some Operators in bidding the Testicle which they separate.* *A Dog fed with Testicles.*

The Testicles are Parts so necessary to Man, that he ought not to be depriv'd of them on any other account than the most pressing Necessity: Wherefore we condemn these sorts of Operations, as contrary to both Human and Divine Laws: They would yet indeed be more excusably perform'd on a Monk or Priest, which would prefer being cur'd of an *Hernia* to his Testicles, which ought to be of little use to him, and he would thence draw two Advantages; first that those Organs would no longer torment him, and secondly the being cur'd of a grievous Distemper.

FIGURE XXII. Of the BUBONOCELE.



Of the Bu- **T**HE Bubonocèle is a Tumour in the Groin, which has
 bonocèle the Figure of a Bubo, and comes in the same Place where
 and its E- they do. Its Name is deriv'd from *Vouvon* which signifies
 tymology. Groin, and Kele, Hernia or Descent, so that this Tumour re-
 sembles a Bubo, and is really a Hernia.

Difference The Chirurgeon must not be deceiv'd in the judgment
 betwixt a which he is to make of these Tumours, for if he should mi-
 Bubono- stake a Bubonocèle for a Bubo, and expecting to find it charg'd
 cele and a with Matter should open it, he would kill the Patient: Where-
 Bubo. fore he must examine the Indisposition, observing that a Bubo
 comes

comes by flow degrees, and a *Bubonoccele* all at once, and also informing himself whether the Patient has a *Hernia*, and whether he has not some way strain'd himself. If he attentively remarks the Accidents which accompany these Infirmities, he will find that the *Bubonoccele* is accompanied with violent Pains, with Vomitings which do not cease as long as the Tumour continues, and also that what the Patient brings up has the smell of fæculent Matter, which does not happen in case of a *Bubo*.

The World has given the name of *Miserere* to these sorts of Infirmities when in their *Paroxysme*, because the Patients are then real Objects of Pity, and move Compassion: They require a very speedy Help, which we apply our selves to procure, by endeavouring to force back into the Belly the Part which is fall'n out, at which occasions this Tumour. To compass which, we must try to reduce it as we do other *Hernia's*; which if we cannot do, the Patient must be plac'd with his Head downwards, and pushing back the Tumour with more adrefs than violence, we must force it in again; sometimes by throwing cold Water on this Tumour, it has been reduc'd. It belongs to the Chirurgeon to put in practice all means possible to attain that end: But if all his Pains prove ineffectual, he must make use of the following *Cataplasme*.

Take *common*, and *Marsh Mallows* with their Roots, *Meli- Preparati-* lot and *Camomile*, of each two Handfuls, about half a Pint or *on of a Ca-* something more of *Linseed* bruised, set them over a quick Fire, *taplasme* and make them boil very hard, 'till by the Decoction the Plants proper for are wasted, and the Water wholly consumed, then pass this *this Infr-* Decoction thro' a Hair Sieve; and when you have a sufficient *mity*, and quantity, add a piece of *fresh Butter*, or *Swines Grease*, the *how to ap-* Oils of *Lillies*, of *Camomile*, and of the *Roots of Fenugreek*, and *ply it*. then boil them to the consistence of a *Cataplasme*.

This *Cataplasme*, compos'd of emollient Herbs, must be made very greasie, that it may the better mollifie and relax; it must be spread very thick, and left twelve Hours on the Part, taking it off, and substituting a fresh one: The Chirurgeon must again try to reduce the Part, which frequently succeeds after the use of these *Cataplasms*, without being oblig'd to come to Operation.

If within the compass of two or three Days we cannot re- *Danger of* duce this *Hernia*, if the Pain and Vomitings augment rather *the Patient* than diminish, the Chirurgeon is to advertise the Patient of *when these* the danger which threatens him, and propose to him the Ope- *means are* ration as the sole way of saving his Life: He must also, taking *unsucces-* apart his Relations, shew them the danger in which he is, in *ful*, order to their advising him to settle the Affairs of his Consci-
ence and Family, proposing to them the Operation as the only means of curing him, if not incurable.

The Operation then necessary.

When a Chirurgeon has without hesitation acquainted the Patient that he must of necessity resolve to die, or undergo the Operation, there are none but will chuse the Operation. We are not willing to die; and tho' we are certain of suffering great Pains, we always prefer them to Death. I have seen some press the proceeding to it so hard, that they would not allow time for the preparation of the *Apparatus*, and I have found others suffer it with an Angelical Patience, which shews that there is nothing that Men will not endure to protract that last Hour.

Disposition of the Patient and Operator.

Having fix'd the time, and prepar'd the *Apparatus*, such as you see Engraven on the XXIII'd Plate, we move the Patient to the edge of the Bed on the side on which the Tumour is, and place a Cushion under his Buttocks; the Chirurgeon kneeling by the Bed, and having plac'd a Servant at his right, and another on his left, he begins the Operation by taking up the upper Skin of the Tumour, which he pinches, and causes to

Conduct of the Operation.

be held by a Servant, in order to cut it with the *strait Incision Knife A*; he makes an Incision two Inches long, then separating the lips of the Wound with a Tooth-pick *B*, he tears the Membranes which envelope the Tumour; he is assisted by his two Apprentices, who by the assistance of the two *blunt Instruments C C* farther separates the lips of the Wound: He avoids here the making use of sharp Instruments, for fear of hurting the Intestine, which is always very near these Membranes: They are yet sometimes so hard, that he is oblig'd to cut them with the Penknife *E*. Then Patience is highly necessary, and we must proceed gently for fear of ruining all, if we press on too hastily; for 'twill cost no less, than the Patient's Life, and the Reputation of the Chirurgeon, if he should pierce the Intestine.

Issuing out of serous Humour.

After having lacerated or dissected these Membranes, we discover the Purse which contains the Intestine; we open it gently and with great circumspection, making use of the Tooth or Gum-picker, or of the Penknife: The Chirurgeon must not be surpris'd, if after having a little open'd it, he sees a sort of serous Humour issue out, this Purse almost always has it; I have observ'd such a great quantity, that this Water sometimes flew up to the Bed's Tester. When the Liquor is come out, he introduces a *kollow Probe F*, in the aperture which has made him a Passage, and with the *Scissars D*, one branch of which is guided in the Channel of the Probe, he opens the Purse its whole length, and then sees the Intestine discover'd: He draws out as much again of the Intestine as is enter'd in the Sack, that the Matters of which it is full, being contain'd in a larger space may facilitate the introduction of that Entrail. He then takes the same Probe *F*, which he introduces into the Ring of the Muscles thro' which the Intestine came out, and raising it up, so that the Entrail be not

Observation in opening the Purse.

clogg'd,

clogg'd, he slides the Point of the *curve Incision-Knife G*, into Effect of the Channel of the Probe, and raising the Knife at the same *cutting the* time, that he withdraws it, he cuts the edges of the last Ring, *last Ring.* which is that which occasion'd the Suffocation: In making this Incision on it, he will hear a Noise, as tho' he was cutting of Parchment. The Wound being clear'd of the Probe and Incision Knife, he feels with his Finger to examine whether the Passage be free, and well clear'd of its Bridle; then pushing in the Intestine by little and little, he continues 'till he has restored it into the Cavity of the Belly, observing to thrust that in first which came out last: Then he tells the Patient, he must move a little towards the right and left, that by this Motion the Intestines may each of them resume their ordinary Place.

If no more than the *Intestine* be in the Tumour, the Opera-*Practice* tion is finished when that Part is reduced; but if the *Epiploon* when the come out with it, it cannot accompany it in its Return to its Omentum Place; for if the Air come but for never so short a space of *is come out* Time to the *Epiploon* it putrifies, and that part of it so cor-*with the* rupted must be extirpated; to which Purpose the Chirurgeon *Intestine.* takes a Thread, one end of which is pass'd through the Eye of a Needle, and with it binds that part of the *Epiploon*, which was in the Tumour; and after having fastened and knotted it, he runs the Needle through the *Epiploon* so bound, that the Thread may not slip; then with the Scissars he cuts off the *Epiploon* below the Ligature, and thrusts back that part which is bound, that is, the sound Part into the *Abdomen* with utmost Diligence.

The Chirurgeon must observe two Things in the Ligature *How to cut* of the *Epiploon*. First, That in performing it, he draw forth *the Epi-* a sufficient part of that *Reticulum*, to perform it on a part of *ploon.* it not yet corrupted by the Air. And secondly, That the Ligature being made, an end of the Thread about a Foot long be left to hang out of the Wound, in order to draw out the Knot when Nature shall have separated it.

All the Operations practis'd on the *Bubonocoele* are not so ea- *Circum-* sily as that which I have been describing. That Infirmary is fre-*stances* quently attended with Circumstances which render it very diffi-*which ren-* cult; Adhæsiion is one of the most troublesome and painful, as *der these* I have sometimes seen; and amongst other Instances, in a Corn-*Operations* Porter at *Paris*, who labour'd under an old neglected *Hernia*, *difficult.* the Intestine taking up its Residence in the *Scrotum*, where by long Continuance, and the ordinary Visciousness of those Parts, it was fix'd to the neighbouring Membranes, and by a fresh Strain another part of the Intestines was slipt into the Rings of the Muscles, and there occasioned a Suffocation, which obliged us to proceed to Operation. This last Gut being re-*Relation of* duced, I found the first sticking very fast: It must be dissected *a Case to* with a Penknife to disengage it, which I did with great Pati-*that Pur-* ence, for fear of opening the Intestine, I cut rather the Mem-*pose.* brane

brane of the *Scrotum*, than that of the Passage, and at last I succeeded, the Patient was cured, and was never again afflicted with any Descent during the rest of his Life, tho' he continued a Corn-Porter.

We are convinced of the Reduction of the Intestine, by thrusting our Fingers into the Incision. I performed this Operation on a Taylor's Wife in the *Rue du Bel-air* at *Verfailles*, in Presence of Monsieur Moreau, first Physician to the *Dauphiness*; the Intestine being reduced, I desir'd him to put his Finger into the Wound, to satisfy him that the whole was restored to its place. Having dressed the Patient, we went away together, and in our Return he told me that the Woman would die. I asked him, on what he founded that Prognostic? He answer'd, that the Intestine was bursten, for his Finger smelt of fæculent Matter. But I assured him, that Entrail was intire, and that my Fingers smelt worse than his, because they had continued longer in the Wound; and accordingly the Patient recover'd, and is at present in very good Health, tho' 'tis above fifteen Years since she underwent this Operation.

Whence the ill Scent in the Wound. This ill Scent proceeded from the most liquid of the fæculent Matter, which being enclosed and pressed in the Intestine, passed through the Pores, as through a very fine Sieve, and made that stinking Impression which we perceived; but did not hinder the Recovery of the Patient.

Why dangerous to defer this Operation. There is one Misfortune to be fear'd in this Operation, that is, that frequently the Patient having staid too long, we find the Intestine gangreen'd and putrefy'd, so that it tears like wet Paper: This commonly happens to People of Quality, who long defer their Choice, by reason of the great number of Persons depending on them, who all propose their Remedies, which they will try before they submit to Operation, which, by this Delay, becomes useless, which the Chirurgeon ought to know by the Redness or Lividness of the Tumour, by the diminution of the Patient's Strength, by Augmentation of the Symptoms, and by the long Date of the Infirmary. In this deplorable Case the Chirurgeon must not undertake the Operation, since all Hopes of Cure are past.

Two Circumstances to be observed to compleat the Operation. The Intestine and Epiploon being returned into the *Abdomen*, the Patient no longer feels any Pain. Ease succeeds the Complaints which we heard him before utter, and in a Moment he tastes the Fruit of the Operation. But before dressing him, two Particulars are requisite to be observed, in order to render the Operation perfectly compleat. First, To cut all the Membranes which compos'd the Purse; and secondly, That if the *Hernia* was fallen from the Groin into the *Scrotum*, that Part must be laid open its whole length, to prevent a Purse growing at its bottom to receive the Matter in the time of Suppuration.

Dressing of the Patient All these Circumstances observed, the Operation is finished, and the Wound is to be immediately dressed. The Chirurgeon then begins with the *Tent H*, which for this first time, as well

well as the Pledgets, must be covered with Yolks of Eggs mingled with Oil. This Tent then must be thus capp'd, fastened to a String, I, and be large enough to occupy the Aperture of the Rings, and to oblige us to force it in; he then with the small Pledgets K K, fills up the remaining parts of the Incision, and covers it with the flat Pledgets L L, he lays on the Plaister M, and over that the Bolster N, which must be thick, the better to contain the Part. He then embrocates the Belly and Purse of the Testicles with Oil of Roses contained in the Cup O. He applies the Square Bolster P to the Belly, and the long one, Q, serves for a Truss to the *Scrotum*. These Bolsters must be moisten'd in warm Wine, and the Band R is to keep on all of them. The Bandage must be *Inguinal*, resembling the Form of a Spike, and its Circumvolutions must be made around the Body and Thigh, the Band re-ascending betwixt the Thigh and the Purses of the Testicles, like the Herniary Bandage, and also from a Cross on the Groin, and every time that it passes, must be fasten'd with a Pin to render it the firmer.

A Modern Author, who has written of Operations, advises not to make the Bandage in this place, but to draw the Thighs close together, and fasten them with a small Band call'd the *Garter*, to prevent their opening, as we usually do after cutting for the Stone. In this Case he talks like several learned Men, whose Thoughts suggest to them in their Closet Notions which Practice destroys, and this is one of that number. If he had several times performed the Operation at present under our Examination, or had even but a little reflected on his seeing it done, he would have been convinced that the principal Intention which we ought to have, is to close and bind the open part well, that the *Intestines* and *Epiploon*, which have a Tendency to come out, may not again escape; for if left to their Liberty but never so little, they burst out again more easily than before the Operation, because the Rings which are cut out, open them a wider Passage. If in *Lithotomy* we only apply a restraining Bandage, 'tis by reason we design to let out the Clots of Blood, and the Gravel; but here we have a contrary Task, which is to hinder that which is return'd into the body, coming out again, and nothing but Bandage answers this end.

Tho' the Operation be well perform'd, and consequently the Vomitings should end, they yet frequently continue some Days. But the Chirurgeon ought not to be surprized if that happens, because the peristaltic Motion of the Intestines tending to press downwards what is contain'd in them, when the Parts are in their natural State, take a contrary Course during their Suffocation, when the Passage being stopped, the contained Excrements are forced upwards by an Antiperistaltic Motion which continues some Days after the Operation, the Guts not having yet

Quality of
the Ban-
dage.

Bandage to
be very
close.

Wherefore
Vomitings
continue
sometimes
after the
Operation.

cipitation into the *Scrotum*; whilst the *Hydrocele* is form'd by the distillation of some serous Humour which falls drop by drop from the superiour Parts, and at length fills this Part, where this distill'd Water is generally contain'd in the common Membranes, and sometimes in those proper to the Testicle; in which last Case, the Tumour is harder to be cur'd, as well because the resolution is not so easie, by the use of Medicaments, as by reason more Membranes are to be pierc'd, if we are oblig'd to proceed to Operation.

The Young most subject to it. Young Persons are more subject to this Disease than those of an advanc'd Age: I have seen Children come into the World with Water in their *Scrotum*: This *Lympha* is known by the transparency of the tumified Purfes: For putting a Candle behind the *Scrotum* we find it clear, like a Bladder full of Water.

One of the Causes of the Hydrocele. When the *Hydrocele* succeeds the Dropsie, and is form'd of the Water which the lower Venter discharges into the *Scrotum*, and also into the spongy Substance of the Yard, which appears moisten'd and swell'd, we must have recourse to the Cause of the evil, if we will cure it, for as fast as we empty these Parts, the *Abdomen* will furnish fresh Water which will always keep them full; but when there is no Water elsewhere than in the Purfes, the Cure is to be undertaken two ways, either by Medicament, or Chirurgery.

Cataplasm and other Remedies against it is Infirmity. Medicaments succeed, when the habit of Body is otherwise good, and there is but a small quantity of Water in the Part. In this Case we make use of desiccative Remedies, as well general as particular. I leave it to the Physicians to prescribe the general, but as a Chirurgeon shall inform you that the application of astringent Remedies which are desiccative, contribute very much to the Cure: To that end then boil in Red Wine, Wormwood, Pomgranate-shells, Cumin, Camomile, Melilot, and a little Allum, and with this Wine, whilst hot, foment the *Scrotum*, on which always leave a Bolster soak'd in this Liquor: Or prepare Cataplasms from the four astringent Flowers or Meals, and the Powders of Cumin, Roses, Camomile, and Melilot, boil'd in a Lye made from Vine Branches: Or else apply to the Purfes of the Testicles a Sponge wetted in Lime Water. All these Remedies are excellent, and I have seen them cure Patients, tho' they had above three fourths of a Pint in the *Scrotum*: And I must farther own that I have seen very great *Hydrocele's* which tho' neglected have grown perfectly well without the application of any Remedy, or so much as the use of the *suspensory Sling*.

I don't propose these Instances as Rules to be followed: I have seen *Hydrocele's* which have obstinately withstood the efforts of the most powerful Medicaments; and in which we were forc'd to manual Operation, which is perform'd several ways, pursuant to the Intention which the Chirurgeon ought to have; for he may have two Designs with regard to this Disease, the one to obtain a palliative, and the other to procure an eradivative Cure.

We call that a palliative Cure, which aims no farther than *Palliative* palliating the Infirmary, by diminishing the Symptoms, by bare-*Cure*.
ly voiding the contain'd Water, without preventing its return.

The eradivative Cure is that which not only remedies the *Eradica-* Indisposition at present, but by extirpating its Roots, and *tive Cure*. penetrating to the Cause it self, prevents its ever returning.

The Operation which is perform'd in order to the palliative *Three ways* Cure, ends in voiding the Waters contain'd in the *Scrotum*, of *Opera-* which is executed three ways, either by *Punction* with the *Lan-* *tion in the* *palliative* *Cure*.
cet, by *Seton*, or by the *Trocar*.

We take a *bleeding Lancet A*, and after having open'd it, *How the* wind it about with a narrow linnen Tape, leaving none of *Punction* that Instrument uncover'd besides the Point, so far as we think *with the* it must enter to reach the Water: We then appoint the Purfes *Lancet is* to be held by a Servant, who raises the Testicles in order to *perform'd* secure them from the Point of the Instrument, and force the Water to the bottom of the *Scrotum*, where the puncture must be made. Then the Chirurgeon takes in his right Hand the Lancet, which he thrusts in 'till he sees the ferous Humour issue out, when with the left Hand he slides along the flat part of that Instrument the *Stiletto B*, into the Purfes of the Testicles: He then immediately withdraws his Lancet, and with the same Hand with which he held it, takes a small *Pipe C* which he conducts into the Wound, passing the end of the *Stiletto* into the cavity of the Pipe, which sliding along the same *Stiletto* will enter very easily; the *Stiletto* being withdrawn, we leave all the Water to evacuate thro' the Pipe: Which some will have to be continued in some Days, to favour the draining out of the Humidities with which the Part is penetrated, and in this case to the Pipe is affix'd a small *Ribbon D*, to fasten it: But commonly after the Water is evacuated, we take out the Pipe, and lay on the Aperture a *Plaster of Ceruse E*, then a *Bolster F*, wetted in astringent Wine, and the *Sling G*, that the Testicles, being no longer sustain'd by the Water, may be supported by the Bandage. Let's now see how our Ancestors perform'd this Operation on the Purfes of the Testicles.

But some amongst them maintain'd that the Water might *Operation* more commodiously be drawn off by a *Seton*, especially when *with the* there was a *Hydrocele* on both sides: They have told us that *Seton*. we must take a *coarse strait very long Needle H*, threaded with *Cotton Wick I*, which is to be run thro' the Purfes from the left side to the right, carefully avoiding the hurting the Testicles; the Wick is then left in, one end of which comes out at that end of the Passage which the Needle made, and the other at that at which it came out. At these two ends of the Wick, the Water will continually distil and drain out, 'till there not a drop left in the Cavities; and when they are perfectly clear'd the Wick is to be drawn out, two small Plaisters laid on the Apertures, and then cover'd with the Bolster and Sling, in the precedent Operation.

Cause of Hernia's in Women. Women have at their *Matrix* two Ligaments which are call'd Round, from their Figure, and Inferior from their Situation: They proceed from the lateral Parts of the *Fund of the Uterus*, one on each side, and in their descent they pass thro' the Rings of the three Muscles of the *Abdomen*, then dilating themselves in the shape of a Goose's Foot, they insert themselves into, and lose themselves in the Thighs; the Passage which they make is almost like that of the *Spermatic Vessels* of Men, and 'tis by the same way on occasion of some Strain that the *Intestine* and *Epiploon* slip out, and produce *Hernia's* in Women, which give us as much trouble to Cure as those of Men.

Use of the round Ligaments. To this day all Anatomists have believ'd that the use of these Ligaments was to hinder the Fund of the *Matrix* from slipping too high up: But the Bottom and Neck of the *Uterus* being but one Continuity, and the latter being so firmly fix'd to the neighbouring part, 'tis scarce possible that the former should change its place. I should think Women very unhappy, if for such an imaginary Advantage as that, they should be forc'd to suffer real Incommodities, such as are the Pains occasion'd by these Ligaments during their Pregnancy, and the *Hernia's* to which they are liable, and from which they would be exempt, if there were no passage for them. I own they receive another advantage by them, I affirm that they advance the Fund of the *Matrix* forwards towards the external Orifice, as I have said in my Anatomy; their Structure, and the Necessity of the *Matrix* advancing to meet the Seed in order to receive it, prove my Assertion.

How to cure these Hernia's. The *Hernia's* which Women labour under, commonly remain in the Groin, sometimes they descend to one of the Lips of the external Orifice, being always caus'd by Strains, as are those of Men. They are also cur'd by the same Remedies and Bandage, except only that the Steel-Bandage or Truss is not proper for them; and that we make use of the *Inguinal* or *Mushroom Bandage*. When 'tis attended with a Suffocation, we have recourse to the Operation practis'd on the *Bubonocoele*, which in the Sex is not accompanied with such grievous Accidents as in Men; but Women are also more subject to them, because the way thro' which the round Ligaments pass, is straiter than the Passage which gives issue to the *spermatic Vessels* of Men. I have several times perform'd this Operation, and observ'd that the number of Women on whom I have practis'd, exceed that of the Men which have fall'n under my Hand.

FIGURE XXIII. For the OPERATIONS
of the SCROTUM.



Gentlemen, having shewn you the way of curing *Hernia's*,
I am now in the next place to demonstrate to you the
Operations requisite to those which seem to be *Hernia's* but are
indeed real Tumours. I have told you that there are five sorts
of them, viz. the *Hydrocele*, the *Pneumatocèle*, the *Sarcocele*,
the *Circocèle*, and the *Humorale*. Five sorts
of Tumours
in the Scro-
tum.

The Word *Hydrocele* comes from *Hydros*, Water, and *Kele*,
which signifies Descent, so that this Disease is an amass of Wa-
ter in the Purse of the Testicles, whence 'tis call'd the *Dropisie*
of the Scrotum. There are Signs which distinguish it from
the Descent which happens all at once, the Parts fall with pre-
cipitation

yet reassumed their Spring and natural Contractions. Some Operators make their Patients swallow leaden Bullets, but that Practice is dangerous; and 'tis much better to give them some Glasses of a Lexative Pilsan to turn out this excrementitious Matter by the way which it ought to pass. This I have always given with Success, and as soon as the Patient had a Stool, the Vomiting ceased: I am obliged for this Practice to Monsieur Moreau, first Physician to the *Dauphiness*, whom I have frequently seen prescribe it with Success.

Relation of a Case on this Head. Going to meet the Dutcheſs of *Burgundy*, we ſtaid ſome time at *Lion*; in which Place Monsieur *Parifot*, an able Chirurgion of that City, performed the Operation of the *Bubonocèle* on a young Lady in the Convent of the new Converts. The Physicians were alarmed at their finding the Vomitings not to ceaſe immediately after the finiſhing of the Operation, and according to their Cuſtom, accused the Operator, charging him with not ſufficiently unbridling the Rings, as they ordered in the time of the Operation. I was entreated to come thither, and found the Operation very well performed, they had made the Patient ſwallow ſeveral leaden Bullets, and upon them yet three or four Ounces of Quickſilver, pretending that glided more ſwiftly than the Bullets. There were four Physicians, one of which was Monsieur *Falconet*; I ſhewed them the miſchievous Conſequences which might attend this Practice, by repreſenting to them, that the Portion of the Inteſtines, which had been encloded in the Tumour, muſt have been dilated by the Matter contained in it, and conſequently being enfeebled, theſe Bullets and Quickſilver might ſtop in that Place, as in a Sack, and by their Ponderoſity burſt the Gut, and cauſe the Death of the Patient. I recounted to them the Practice of Monsieur *Moreau*, and that very hour they gave the Patient a Purge, and two hours after another; as ſoon as the Belly was open'd the Vomiting ceaſed, the Patient grew well, and the Physicians were forced to do Juſtice to Mr. *Parifot*.

The ſoul Practice of ſome Phyſicians with regard to Chirurgions and Apothecaries. I am ſurprized at the Proceedings of theſe Phyſicians, with regard to Chirurgions whom they treat very rudely and imperiouſly, and controul even in the time of their Operations; theſe Gentlemen urge as a reaſon for this Practice, that the Operators would continually commit Errors if not aſſiſted by the Advice of Phyſicians. But if a Chirurgion wants help whileſt at work, he cannot be better aſſiſted than by another Chirurgion who is expert in theſe Operations.

Theſe Chirurgions are not the only Perſons fatigu'd by the Phyſicians of *Lion*, the Apothecaries are yet worſe perſecuted by them. Theſe Doctors having in a ſort engag'd and undertaken to ruin them, ſend all Perſons to buy the Medicines, which they preſcribe, to the *Jefuits*, who have erected a famous Diſpenſary, and alſo have within theſe ſeven or eight Years eſtabliſh'd a ſet of *Charitable Siſters* at the *Hopital*, who make

make and sell all sorts of Compositions; the Pretext which they have made choice of to authorise this Novelty, is, that by these means, say they, the Poor will gain by the Profit resulting from the selling of these Drugs. But these Gentlemen who by these means pretend to advance the Reputation of their Faculty, don't consider that by destroying *Chirurgery* and *Pharmacy*, they do a very great Injury to the Profession of *Physic*, which would be venerated thro' the whole World, if there was a strict Union of those three Bodies of which 'tis compos'd.

The next day after the Operation, in dressing the Patient we don't take out the Tent, but if it be come out of it self, put it in again: When 'tis well plac'd in the Rings, we leave it for two or three Days, and make use of a strong Digestive to avoid the Putrefaction of the Parts, to which they are but too apt; we also pour on the Wound some drops of *Fioravanti's* Balsam to enliven it, and take care to put in a Tent large enough to occupy the whole Passage; this we don't diminish any other-wise, than in proportion that the Flesh returning denies it entrance in so large a bulk. To conclude, the Incision being cur'd and cicatrised, we oblige the Patient to wear a great Bolster and Bandage for the space of two or three Months, for fear that by some fresh Strain, the Intestine should again slip to the place from which it had been driven; which has sometimes happen'd for want of Precaution.

The Advantage resulting from this Operation, is that when 'tis well perform'd, and the Patient well cur'd on one side, he is out of fear of any descent on that side, because the Cicatrising of all the Parts retains the Guts and *Epiploon* in their Places. It may indeed happen on the other side, and there are instances of Persons who have been oblig'd to undergo the Operation on each side, at different times.

After having instructed you in the ways of curing, as well by Bandage as Operation, the *Hernia's* which fall on Men, 'tis proper to speak of those to which Women are liable, in order to afford them the help which they don't less want than Men in these cruel Infirmities.

Women are not indeed afflicted with so many Species of *Hernia's* as Men, they have no other than those we strictly and properly call *Hernia's*; I mean those which are produc'd by the Parts, as the *Enterocoele*, the *Epiplocele*, and the *Enteropiplocele*, being wholly Ignorant of those which happen from a Settlement of Humours, and are *Hernia's* only in appearance, that Sex not having any *Scrotum*, which is the Place where these Infirmities grow; and for the same reason their *Hernia's* are almost always imperfect, the Parts being more frequently oblig'd to stop in the Groin, because they don't find such a Purse as the *Scrotum* to slide into.

Manner of using the Trocar. The Moderns have invented a small Instrument call'd the *Trocar*, or *three quarters, L*, because its Point is triangular; it resembles the *Trocar* with which the *Paracentesis* is perform'd on the *Abdomen*, excepting only that that is a little less: This resemblance of the Instrument has given occasion to some to call the Operation on the *Hydrocele*, the *Paracentesis of the Scrotum*. 'Tis thus perform'd, raise the *Scrotum* with the left Hand, and squeezing or pressing it in order to drive the Water downwards, then you must proceed to Punction, then at one push strike in the Instrument, which will easily pierce the Membranes, by reason they are stretch'd, and withdrawing it we leave in the Wound the *small Silver Pipe M*, which was inserted whilst the Instrument was there to direct it; and by this means the Water is drawn out to the last drop; and the Operator contents himself with the *Apparatus* of a sole *Ceruse Plaster N*, laid on the Aperture made by the *Trocar*.

These three Methods are only palliative, as I have already hinted, and pretend to no more than to draw the Water out of the *Scrotum*, without any regard to their consequences: For some Months after the Water begins to gather afresh by slow degrees: And the Purse being tumefied to the same degree as before, a new Puncture is to be made, which must also be renewed as often as the Water gathers in these Parts.

What requisite to an absolute Cure. But when we resolve on a perfect Cure of the *Hydrocele*, 'tis not enough to evacuate the Water, 'tis absolutely necessary to prevent its return by filling up the cavity where it gather'd. To perform which, after having prepar'd the Patient by general Remedies, a train of *potential Cauteries*, that is *Caustics*, is to be apply'd all along the Tumour; and when they have had their due effect, the whole length of the Tumour must be laid open on the Scar, and to the bottom of the *Scrotum*, that there may remain no Bag or Purse: The Incision is to be fill'd with Pledgets, and then we must procure its suppuration, which draws along with it the falling Scars and Membranes corrupted by the continuance of the Waters there: The Tunics or proper Membranes of the Testicles, which ought to be preserv'd with utmost possible Care, must not be touch'd. All these Parts being sufficiently suppurated, and the Wound well cleans'd, we then endeavour to bring it to cicatrise well, which is done by the union of the Testicle with the *Scrotum*, which Parts so join themselves together, that leaving no vacant space betwixt them, there is not the least danger of a Relapse.

Of all these Methods the last is the best and most secure, but is withal the most tedious and painful; wherefore the Chirurgeon frequently proposes it in vain, the Patient refusing to submit to it; but preferring the palliative Cure, and chusing rather several times to suffer the Pain occasion'd by puncti-

on, than to venture himself courageously in the Hands of the Operator, who freeing them from a very uneasie Infir-
mity, especially to married People, would also perfectly cure
them.

The Word *Pneumatocele* comes from *Pneuma* which signifies *Spirit* or *Air*, (and *Kele* a confirm'd Tumour, so that this
Disease is an Impulse of Air and Wind in the Scrotum,

There are two sorts of this Infirmary, one, when Wind is
so interspers'd in the Intervals betwixt the Fibres of the com-
mon Membranes of these Parts, which are then tumefied like
those of the Flesh of Animals which the Butchers have blown
up, immediately after their killing: The other is when the
Wind is confin'd in the Cavity of the *Dartus*, or second invol-
ving Tunicle of the Testicles: In this Case, like the Water in
the *Hydrocele*, the Wind sometimes occupies but one of the
two sides, but at other fills both the cavities of that Membrane.

These two sorts of *Pneumatocele's* are distinguish'd by the
Touch: When 'tis an Inflation we feel an *Emphysema*, and the
Tumour yields to the Finger; but when the Wind is lodg'd
in the cavities of the *Dartus*, the Tumour resists the touch,
and the *Scrotum* is extended as tort as a Foot-Ball. I have
met with rascally Beggars, who by piercing their *Scrotum*, and
blowing it up thro' a Straw, have so fill'd it with Wind, as to
swell it to an extraordinary Bulk: Which done, their next Bu-
siness was to lay themselves at a Church-door, and expose the
Scrotum naked to the view of all Persons, by which means
exciting the Pity of those who pass'd by them, they receiv'd
their Charity, for which they were oblig'd to this suppos'd
Infirmary.

The *Pneumatocele* occasion'd by Inflation, is cur'd by hot
and dissolvent or discussive Remedies, either taken inwardly,
or applied to the Part: The use of the *King's Rosa Solis*, the
Composition of which I have already imparted to you, when
I treated of the *Tympany*, is excellent in this Case, as well as
every thing else which fortifies and augments the natural heat,
by reason that this Infirmary proceeds always from a defici-
ency of natural Vigour, or a relaxation of the natural Powers
or Springs which render the Digestion imperfect: In this Case
we make use of fortifying and carminative Cataplasms, and
Fomentations of Wine, in which is boil'd *Roses*, *Cumin*, *Camo-
mile*, *Melilot* and all other aromatic Herbs which revive the
decay'd heat of the Part, and dissipate the Wind.

When the Wind is in the cavity of the *Scrotum*, we make
small punctures with the Needle O, in order to let it out: If
it does not evacuate by these too small punctures, we have re-
course to the *Trocar P*, as in the *Hydrocele*. The Wind be-
ing issued out thro' the small Pipe, we make use of the same
Fomentations as above; we lay on a Bolster moisten'd in the
same prepar'd Wine, as hot as the Patient can bear it, and
then fix the Sling, which is of great use in this Case.

Of the
PNEUMA-
TOCELE,
and its O-
riginal.
This Indi-
position of
two sorts.

Its forma-
tion.

The

Of the SAR- The Word *Sarcocoele* is deriv'd from *Sarx*, which signifies
COCELE. *Flesh*, and *Kele*, a *Hernia*: 'Tis an unnatural Tumour, ga-
Whence the ther'd near the Testicle, and compos'd of hard and *scirrhus*
name de- *Flesh*, frequently accompanied with *varicous* Vessels.

riv'd. This Tumour is sometimes produc'd from a fungous and
Causes of insensible *Flesh*, which first arises and grows on the Testicle,
this Infir- in the same manner as we see great Mushrooms do on Trees:
mity. This *Flesh* results from a gross and viscous Blood, which it
being impossible should return into the Mass, converts it self
into *Flesh*, filtrating it self and stopping in the fibrous parts in
greater quantity than is necessary for their nouriture; and of-
ten it comes by some Blow or Bruise on the Testicle which
makes way for the engendring of this Substance, by reason that
by the laceration of the Fibres of the Membranes of the Te-
sticles, the Blood which repairs thither occasions an *Ecchymo-*
sis, and produces a *Flesh* very strongly fix'd to those Mem-
branes. The difference betwixt these sorts of Tumours and
real Descents, is that they begin with a small sort of place,
which insensibly increasing becomes extremely large: *Fabri-*
cus avers that he saw one of the bigness of a Hat-block,
these *Fungi* growing in the same manner with the excrescence
within the Nostrils, which we call a *Polypus*: On the contrary,
Descents come all at once, and their Tumour is evener, and
softer.

Thevenin proposes the immediate proceeding to Operation,
which according to him is Amputation, as well of this super-
fluous *Flesh* as the Testicle; but a prudent Chirurgeon will
not be so hasty. He must not have recourse to Operation be-
fore having try'd gentler means, and at the beginning of this
Indisposition, 'tis not impossible to dissolve this *Flesh*; which
I have seen succeed with a Plaister, long worn, and supported
by a Sling: I make use of the three Salves, *Diabotanium*, the
Divine Plaister, and that of *Vigo*, of each of which I take equal
Parts which I dissolve in *Oyl of Lillies*, and spread on a piece
of Leather, in which I wrap the Testicle: I renew this Plai-
ster every eight Days, and have found it to produce good ef-
fects with regard to the hardnesses remaining in these Parts
after a Gonorrhœa which has reach'd the Testicles. In these
sorts of Fluxions, the Remedies which are prepar'd, and the
Cataplasms which we customarily use, dissolve the most sub-
tile part of the Humour; but the grosser which the Mem-
branes of the Testicle have soak'd up, drying there, form a
hardness which we dissolve with the mixture of the three
Plaisters above-mention'd.

If the Tumour, instead of diminishing, increases, we must
then proceed to Operation: But we ought not immediately to
resolve on the Amputation of the Testicle. I advise on the
contrary, never to do it unless when impossible to do other-
wise: For the Testicles are parts so highly to be valued in or-
der

der to the continuance of the Race of Mankind, that we are oblig'd to take a very particular care of them: To which end *Use of Cau-* we apply a train of Caustics to the *Scrotum* along the whole *stics.* length of the Tumour, we procure the falling of the Scars, and then having discover'd the Flesh fasten'd to the Testicle, we endeavour to waste or consume it by slow Degrees by the Remedies prescrib'd by Art, using either corrosive Powders or Unguents, and causing a new Scar to fall every Day, in order to eat the Tumour, and disengage the Testicle, which by this means may be preserv'd. I have seen some Persons cur'd by this Practice; but this Flesh was almost insensible, and the Caustics gave the Patient very little Pain: I have also met with some whose Flesh being more solid and sensible, put the Patient to such great Pain, that 'twas impossible to apply any Corrosive, and then we ought to proceed to Amputation. When *Of the Am-* 'tis unavoidable, we must have recourse to this last Remedy, *putation of* the Aperture being made by the Cauteries, we separate the *the Testicle.* Testicle from the common Membranes, and after having drawn it out of the *Scrotum*, we made a Ligature on the spermatic Vessels with a Thread Q, and cut them with the Scissars R, a half Finger's breadth below the Ligature. Formerly the Chirurgeon with a hot Iron cauteris'd the extremities of these Passages, as Farriers do when they geld Horses, the reason of which Practice was to avoid an *Hæmorrhage*: But at present we content our selves with a Ligature as being less cruel, and yet sufficient to stop the flux of Blood. We leave hanging out of the mouth of the Wound, a long end of Thread, in order to pull out the Scar of the Vessels when it comes to fall, and with Pledgets fill up the place of the lost Testicle, bring the Membranes to suppuration, cleanse the Wound, and afterwards procure its cicatrizing.

I am not ignorant that the Chirurgeon would sooner cure his Patient if at the very first he took off both the Flesh and Testicle: But yet I prefer the attempting to consume this Flesh, before resolving on its extirpation: For in order to both the one and the other Operation, the Aperture must be made exactly by Cauteries; and the second Operation is retarded only a few Days, during which time the Caustics may have found the Flesh to yield: Which will give the Chirurgeon the satisfaction of curing the Patient and preserving his Testicle, and besides of having acted pursuant to the Rule prescrib'd by the greatest Masters, which is to try gentle Remedies, before we proceed to those of a rougher nature.

The *Varicocele* and the *Cirfocele* are two Diseases compris'd *Of the VA-* under the *Kirso-kele*, which signifies a dilatation of the Vessels, *RICOCELE* as well those which we call *spermatic*, as those with whom the *and CIR-* *Scrotum* and the *Dartus* are interspers'd. The Etymology of *SOCELE.* the Word is deduc'd from *Kirso*s which signifies *Varix*, and *Whence the* *Kele*, *Hernia*. Latin Authors have given the name of *Ramex* *name of* to this Disease. There *Cirfocele*.

The Fourth Demonstration

There are two sorts of *Cirfocele*, one when the Veins of the *Scrotum* and *Dartus* are dilated, when 'tis call'd *Varicocele*; and the other when the Dilatation happens to the Spermatic Vessels, which is then called *Cirfocele*.

The *Varicocele* discovers it self at sight, without being so much as touch'd, we discern those Vessels to be swoln and distorted, which creep on the *Scrotum* like Wine branches, and are full of thick gross Blood, whose course being slacken'd in the Veins of the *Scrotum*, that Humour during the time of its stay there being incessantly augmented by a fresh supply of the same which follows it, causes a considerable Dilatation of the Tunics and Ducts, in which consists what we call *Varices*.

The *Cirfocele* is discover'd by the touch, we feel the Vessels stuck to the upper part of the Testicle, hard and thick as Earth Worms, whose form they ordinarily assume, being as tortuous as when those Worms contract themselves: This Infirmary proceeds from the same Cause as the *Varicocele*, that is, from viscous spissated Blood which is hardly able to reascend, in order to mingle with the Mass in its passage thro' the great Trunks of the Sanguinary Vessels.

Causes of these Diseases.

I agree with all Authors, that these Diseases are occasion'd by the grossness of the Blood; but we must add two dispositions which depend on Mechanicks, and the structure of the Parts. The first is, that the Blood convey'd into the Vessels of the *Scrotum* not having in it self any motion to stimulate its advancing, must necessarily remain 'till express'd by the action of some Organ: The second is, that there being neither Muscles nor Membranes which can press the Channels to force the Blood to continue its course; the portion of that Humour which could not possibly re-ascend; and that which comes thither afresh, will by their continuance there forcibly enlarge the Tunics of the same Ducts; for two things cause the Blood to flow in the Veins, the one is the Impulsion of the Arterial Blood, which the potent contraction of the Heart, and the proper spring of the Arteries dart into the Parts, and the other the pressure of the Muscles and Membranes. This last assistance is wanting in this case, so that nothing besides the first is capable of producing this Motion, and frequently that is not vigorous enough to force the Blood to continue its course, which contributes to these Diseases, especially when the Blood is too thick.

This Infirmary peculiar to the Veins.

When I tell you that these Infirmities are Dilations of the Vessels of the Testicle, and of the *Scrotum*, or the *Dartus*, I would be understood to speak of the Veins only, for they never affect the Arteries: If an Artery should dilate it self, 'twould be an *Aneurisma*, and would be accompanied with Pulsation; but in our Case 'tis always the surcharge of the Veins which produces the *Varicocele* and *Cirfocele*.

These

These Diseases don't occasion any exquisite Pain, they are supportable, and only cause a heaviness and restlessness which render the Patient uneasy, and oblige them to have recourse to the Chirurgeon. Corpulent and Sanguine Men are most subject to these Diseases, and most frequently those who abstain from Venery, and rarely those who take the Pleasures of Marriage.

The Cure of them is difficult; we may venture to attempt the *Varicocele*, but it does not generally succeed in the *Cirsocele*, wherefore the Chirurgeon ought not rashly to promise its Cure.

In case of a *Varicocele*, the Chirurgeon is to begin with directing the Patient to bleed several times, in order to lighten the repletion of the Vessels, and then oblige him to a very regular Regimen to avoid Plenitude; then lay on the part a large Bolster moisten'd in astringent Wine, and above that must be fix'd the Sling, which sustains and presses the parts in order to facilitate the flowing of the Blood into its ordinary course. The Ancients cauteriz'd the Veins in several places with actual and pointed Cauteries; but this too cruel Practice is no longer in use. 'Tis, at present, found much more reasonable to open the part with the *Launcet S*, when the Patient finds no relief from the general Remedies, as the Astringent Wine and the Sling, the Chirurgeon is then to open the Veins in those places where they are most tumefied; he must make them discharge all their Blood, then make use of the same Wine and Sling, and by that means he may cure the Patient, making way for the fresh Blood to continue its Circulation.

Preparation
of the
Patient.

If it be a *Cirsocele*, all Authors agree, that there is but one way to cure it, which is Amputation of the Testicle; but in my Opinion the Remedy is worse than the Disease, for which reason I never made use of it. But advise the Patient to bleed from time to time, to take care not to eat too much, nor allow himself in any violent Exercise; but to wear a Sling continually, which saves him in some measure from the Pain which the Testicle would cause, if it was not sustain'd: And without we are, at least, obliged by an indispensable necessity, we ought not to propose the Cure of this Infirmary at the expence of a Testicle, since it may be rendred supportable by the abovemention'd means.

The fifth and last Species of the Diseases which happen to the *Scrotum*, and to which, on account of resemblance, we give the Name of *Hernia*, or the *Humoral Hernia*, so call'd because compos'd of the Humours which throw themselves into that Bag.

Of the
HUMORAL
HERNIA.

The *Humoral Hernia* is then a Settlement of Humours produc'd by slow degrees in the *Scrotum*, so that 'tis properly an Abscess or *Imposthume* produc'd in this part.

Definition.

When

Causes.

When the Body is in a *Cacochymical* State, and by the Corruption of the Blood dispos'd to an Abscess, the Settlement may happen in the *Scrotum* as well as any where else; but commonly the *Abscess* is determin'd to such or such a part by the Primitive Cause, as here by a Blow or a Fall which may have hurt or bruise'd the *Scrotum*, or after the Puncture in the *Hydrocele*, for want of a Sling, or by the performance of a violent Exercise, there may happen a Flux of Humours to this part, which may grow to an *Abscess*, as I observ'd in the *Steward* of the *Queen's-Household*, the Fault of which was charg'd on the Chirurgeon which perform'd the Puncture, tho' he perform'd it very well. A *Gonorrhoea* ill cur'd, and fall'n on the Testicle, will also produce an *Abscess*; and several other Accidents, are capable of bringing this Indisposition.

The Humours which throw themselves into the *Scrotum*, always do so in a large quantity, as well by reason of the low situation, as because that part is capable of the reception of them.

Signs.

This Disease is known by the Tumour and Tension of the Purse, and by the Pain and Redness of them, and by the Fever which accompanies them, which engages the Chirurgeon to have speedy recourse to general and particular Remedies.

Preparation of the Patient.

Bleeding must not be spared in this case, the Regimen of Life must be very light, the Patient taking Broths only to keep him alive: The Belly must be kept open by gentle and *Anodyne Clysters*, and he must continue lying, to avoid administering an opportunity to the Humours of falling into the Part.

The Chirurgeon then tries the resolution of them by Medicaments, and warm and astringent Cataplasms apply'd to the part: They are compos'd of the *four Meals or Flowers*, *Powder of Roses*, *Camomile*, *Melilot*, *Pomgranate Shells*, *Terra Cimolia*, all boyl'd with *Hydromel*, and a *Lye* prepared from *Wine Branches*: The application of these Pulvices must be frequently renew'd, because the fresh ones have the best effect, and the Indisposition is pressing. If after the use of these Remedies we find no diminution of the Tumour; but on the contrary discern that 'tis dispos'd to Gangrene, which happens very soon to this part, we must not defer opening of it.

Operation.

When necessity presses, the Chirurgeon immediately proceeds to Operation with the *Lancet T*; but if it may be delay'd two or three Hours, he must apply a train of Caustics, on which he makes his Aperture after they have perform'd their effect. This way is preferable to the *Lancet*, because the Scar being fall'n, the Aperture is larger, and we can more commodiously convey into the Wound proper Remedies to cleanse it; then he dresses it with quickening and balsamic Unguents, in order to resist the Corruption which is but too frequent

quent to Abscesses in these Parts, by reason they are of a very loose contexture, and the Filtrations which they contain draw thither a great quantity of Humours. Amongst others I have met with one Patient whose *Scrotum* and *Dartus* were so gangreen'd, that they intirely fell off, and the Testicles were wholly stript of their common Membranes, he was yet cur'd by the Dexterity and Care of the Chirurgeon.

This Indisposition is call'd *Racosis*, which is deriv'd from Of the the Greek Word *Racos*, which signifies a bit of used or wetted RELAXA-
Linnen; because in this case the *Scrotum* is so thin, flabby and TION of the
flagging, that it resembles a wetted worn out Rag; but this SCROTUM.
Word *Racosis* is taken in two Senses, either for the Disease, or the Operation proper to it. When understood of the Disease, it comes from *Racos*, as I have told you; when of the Operation, 'tis deduc'd from *Rossein* which signifies to cut, by reason it consist in cutting of the *Scrotum*, which is very much relax'd.

This Relaxation in a strict Sense is less to be regarded as a Disease, than as an Infirmary; which is remedied by obliging the Patient to wear a Sling, which does not fatigue him, nor hinder the performance of all the Functions necessary to Life.

This Relaxation proceeds from an abundance of Humidity, Cause. which soaks into this part, and causes it to extend beyond its bounds, as a Skin when moisten'd is more capable of extension than when dry.

Desiccative and Astringent Remedies are proper for its Cure: Medica-
Such are *Lime-Water*, *Wine* in which are boyl'd *Wormwood*, ments pro-
Galls and *Cumin*. These Remedies must be preferr'd to Ope- per for it.
ration, which ought not to be practis'd on any but those who are resolv'd to be quickly and perfectly cur'd, and who, mauer all that we can offer to the contrary, are resolved to undergo it.

To prepare for the performance of it, we must, as in all other Operations, dispose the Apparatus, which consists in a pair of Scissars, a Needle threaded with a wax Thread, some flat Pledgets covered with some Astringent Ingredient, a Plaster of Ceruse, a Bolster, and a Sling.

Before the Operation the Chirurgeon is to cause the Testi- Manner of
cles to be raised up by a Servant; then drawing the Scrotum Operation
downwards, he cuts off what he judges superfluous with the Scissars S, in the same manner as we cut off a piece of Cloath which we find too long; then with the Needle V, threaded with the wax Thread X, by the Furriers Suture he joins the two edges of the cut Skins, lays the Pledgets on the Suture, which he covers with a Plaster and Bolster, and lastly with a Sling.

After the Operation the Patient is put into his Bed, which he is obliged to keep for some time; he is dress'd as a simple Wound,

Wound, and when the Chirurgeon believes the re-union to be compleated he withdraws the Thread, and after the perfect Cure obliges him to wear the Sling for some Months.

Advantages drawn from it.

Though this Operation is not much practis'd, it has yet its Advantages when once over; for the Testicles being thus sustain'd, and no longer hanging down, they cease to draw the spermatick Vessels by their own weight, and to cause any more that melancholy Uneasiness which quite dispirits those who labour under this Inconvenience.

Of CASTRATION.

It ought to be forbidden.

If I have talk'd to you hitherto of several Chirurgical Operations, and if I have demonstrated them to you, 'twas only to instruct you in the manner of performing them well, and, by their assistance, curing an infinite number of Diseases which require them. But in treating at this time of Castration, my intention is less to instruct than dissuade you from the Practice of it, and shew you that an Operation so pernicious to Mankind, and the Publick, ought to be absolutely banish'd.

Animals and Plants produced by Eggs.

The Author of Nature would not render particular Beings immortal in themselves, but has permitted them to perpetuate themselves by producing one another, each in its respective Species. To understand the manner how Generation is perform'd, we must know that from every Animal there proceeds a certain Matter, which joining it self in a proper place, with that which is disengaged from an Animal of another Sex, engenders a third Animal, which retains the Species of these two; and from every Plant which has the virtue of both Sexes, there separates a Seed capable of producing a Plant like that from which it was separated. That which is loosen'd from the Female is called an Egg, because it encloses an Animal in little, which the Corpuscles, communicated by the Male, vivifie. 'Tis an uniform way which God has made use of to form all living Creatures. Man himself not being excepted from this general Rule: There is only this difference, that the volant Animals, the Fishes and Insects cover their Eggs without themselves, but Women and the Females of other Animals cover them within themselves, so that we may affirm that all Beings proceeding from Eggs, giving that name to Grains or Seeds, because they very much resemble them: But all these Eggs would be unfruitful if the Masculine Seed was not filtrated through the Testicles of the Males; if then we deprive Man of them, or render Women Barren, we hinder the most beautiful Operation of Nature, namely, the perpetual Conservation of Mankind by successive Reproductions. For this reason 'tis the Interest of Kingdoms and Republicks to oppose Castration; those on whom 'tis perform'd are all useless People, being incapable of contributing to the flourishing of Sciences, to maintain Commerce, or cultivate the Earth, not having any Vigour to support their Labours, or resist their Enemies.

The *Turks*, amongst whom this Operation is in use, are excused, on account of the Plurality of Wives allow'd by their Law, which engages them to retain several Domesticks to keep them; and by reason of the heat of the Climate, the Women of those Countries being very Amorous, and in defect of their Husbands satisfying their Passions with Slaves, it very frequently happens that they Castrate them before they place them near their Wives, and then they are called *Eunuchs*, from whom they cut at that time the Yard as well as Testicles, for fear they should divert the Women with that part.

Amongst the *Italians* Castration is very frequent, from another Motive. They are such lovers of Musick, that as soon as they find a Boy which has a disposition to Sing well, they cause him to be gelded to save his Voice, performing this Operation on young People in a time in which they don't foresee its Consequences. But they all of them have time to repent what they have suffer'd, as I have heard the *Italians* of the King's Musick say, they being at the point of Despair to find themselves, for the Charms of their Voice, which alone remains, in an imperfect Condition, which separates them from familiarity with other Men, and exposes them to the Contempt of the fair Sex.

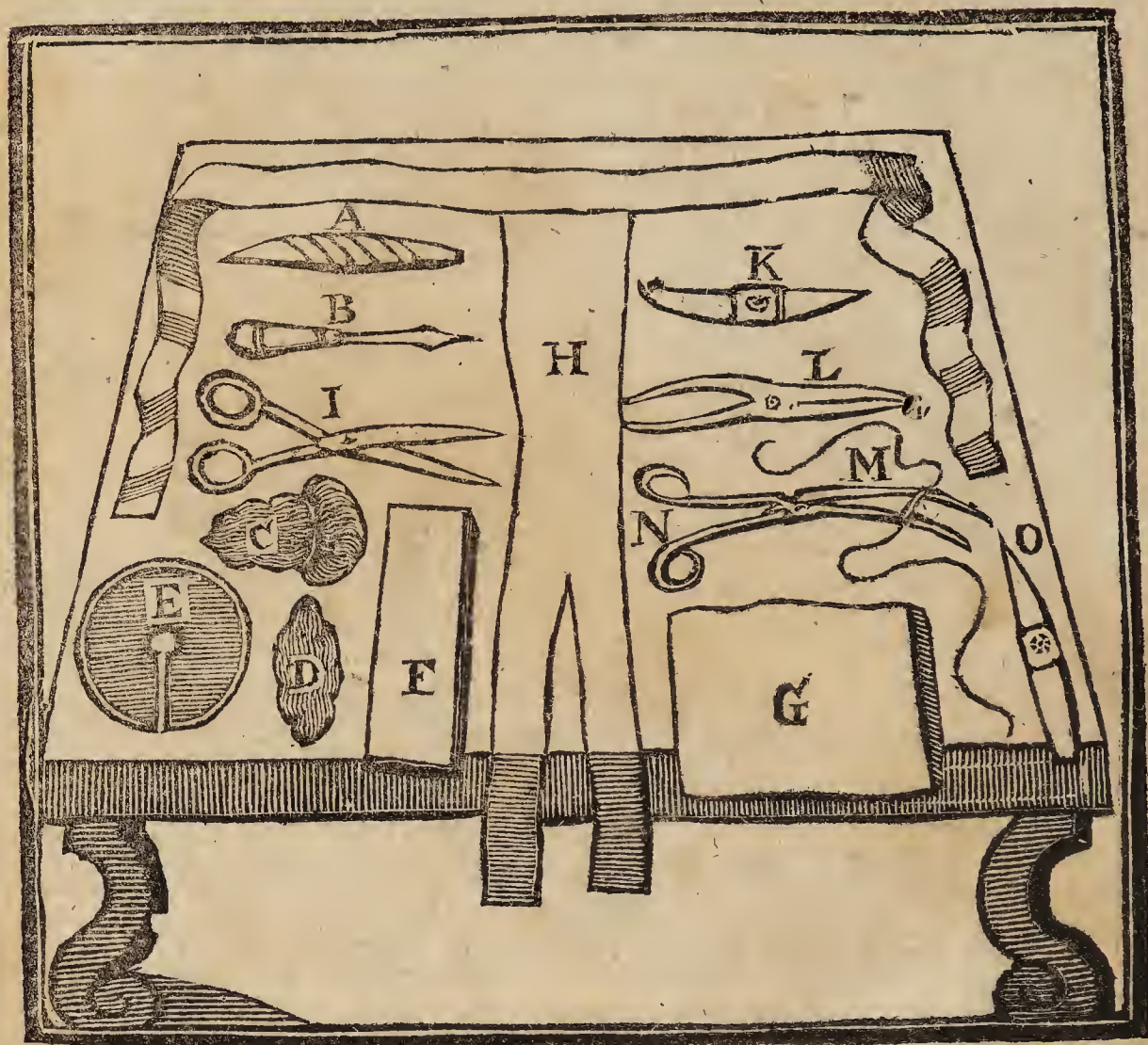
'Tis a mistake that castrated People are exempt from certain Diseases, as the *Gout*, *Leprosie*, or *Elephantiasis*, and sudden Death: Experience convinces us, that besides the Diseases common to all Men, *Eunuchs* have besides several Deficiencies peculiar to themselves: They stink, they are of a yellow Hue, the Visage wrinkled, and their Voice effeminate; they are *Insociable*, *Diffemblers*, *Cheats*, and we don't find them practise any human Virtue.

Vices of
Eunuchs.

'Tis then with reason that I condemn Castration, and that I don't pretend to shew you how 'tis perform'd. If there are any Chirurgeons barbarous enough to desire to learn it, I refer them to the Farriers and Sowgelders, who execute it on Horses and Dogs; and who will instruct them better than I, because I never did it, nor will I ever. I will only hint to you, that if it happens that these Parts are corrupted, and the Person cannot otherwise be cured, after having open'd the Membrane of the *Scrotum*, the Operator must, without injuring the spermatick Vessels of their coverture, bind them about a Finger's breadth above the place where he would cut them, and after the Incision let an end of the Thread hang out of the Wound, that they don't slip into the Belly where they may happen to scatter some Blood; and to have the liberty to withdraw the Portion which Nature will separate: What remains, is to ply the Wound with Digestives, Defensives, Embrocation, and making use of Bolsters and a Sling, without forgetting general Remedies, as Bleeding, Clysters, &c.

Manner of
Castration.

FIGURE XXIV. Of the OPERATIONS to be performed on the ANUS.



What the
Anus is.

It requires
five Opera-
tions.

THE *Anus* is afflicted with as many or more Distempers than any other part of the Body, by reason that being the Common-Shore through which pass all the greatest Impurities, and, as it were, the Sink of all the filth of the Kitchen, it must needs be frequently irritated, and subject to Sediments, by reason of the acrimontious Humours determined to this part. Some of these Diseases are cured by Remedies, which are either general or particular, and others by manual Operation: Which last are those which I now propose to treat on, and at the same time display the Operations which they require, which I reduce to five, viz. the first is that of piercing of the *Anus* when clos'd; the second, the reducing the Gut when fall'n; the third is, curing the *Condyloma*, *Crista*, *Rhagades* and *Fungi*, which happen to this Organ; the fourth is, the Cure of the *Hæmorrhoids* or *Piles*; and the fifth, the opening of a *Fistula* in the *Anus*.

Some

Some Authors tell us, that the Fundament may be two ways *Causes of* clos'd, either naturally, as when a Child comes into the World *the Closure* without any Aperture; or accidentally, when through negli- *of the Anus.* gence, the ulcerated edges of that part are left to glue together and cicatrize. I have seen Children born with their Fundament clos'd, but I never found any who had that part accidentally clos'd, but on the contrary believe it to be impossible, by reason that the great Excrements which daily issue out at it, oblige it to open to make way for them, not allowing a sufficient time to the sides of the Ulcers there form'd to join together. Wherefore looking on this sort of closure as imaginary, I shall only treat of that which is natural.

'Tis not generally perceiv'd the first day of the Child's Birth, that it has this defect; but the second or third, when it has not foul'd it self, we must examine the cause of it: The Chirurgion must remedy it as soon as discover'd, because the Child will be lost, if we don't provide a speedy issue for its detain'd Excrements: These very Excrements will sometimes facilitate the Operation; for pressing on the Membrane which serves to hinder their coming forth, they discover the Place where the Aperture is to be made. If this Membrane is thin, 'tis easily pierced; but if thick and strong, as I met with it in a Patient, where the mark of the *Anus* scarcely appear'd, more Pains are requisite to make the necessary Hole there. To this end we *Manner of* may make use of the *Lancet A*, or the *Incision-Knife B*, thrust- *the Opera-* ing it in 'till we find issue out the *black Matter* called *Mosco-* *nium*, which Infants void immediately after their Birth. This Aperture is to be made by two Incisions which cross one another in the place which is to be the middle of the Aperture of the Fundament, which will the more dispose it to take the round Figure of the *Anus*, than if it were perform'd by a single long Incision. After allowing the Child time to evacuate, we thrust in the *Lint Dressing.* *Tent C*, charged with the Yolk of an Egg beat up with a little Oil; the bulk and hardness of the Tent is to be so proportioned as not to give much pain, and to leave liberty for the fresh Excrements to push forth in case there be any to come out: then are to be applied the *Pledget D*, and the *Plaister E*, next to that the *Bolster F*, and above that the other *Bolster G*, the whole being fasten'd and kept on by the *Band* shap'd like a T, mark'd H.

'Tis needless to make use of a hollow'd Tent, as we do in case of other Apertures, because there is no reason to fear the reunion succeeding. If on the first day we happen not to have made the Aperture large enough, nor of the Figure which it ought to be, it must be amended the next; and to perfect this *How to re-* Operation, with the point of the Incision-Knife, we disengage *the* and unbridle each fold or wrinkle of the Circumference of the *Operation.* *Anus*, cutting the Membrane which causes the closure in the shape of a small Rose, that nothing may remain which may for the future hinder its opening as much as the great Excrements

require, in order to their passage out, and to shut exactly after their Evacuation.

The Apparatus.

'Tis needless to prepare the *Apparatus* before the Operation, because in the first place 'twould be to lose those Moments which ought to be employ'd in relieving the Suffering Infant, and the interval which necessarily falls betwixt the Operation and the Dressing, in order to allow the Child time to void the *Mæconium* and detain'd Excrements, is sufficient for this Preparation.

Reduction of the INTESTINUM RECTUM.

This Intestine sometimes falls, and comes out in Children when they are suffer'd to Cry too much, and in adult Persons which may have strain'd themselves on several Occasions: When it turns out like the Finger of a Glove, and comes forth more or less, according as the Strain was: I have seen it come out half a Foot in length, and as thick as the Arm. This Accident happens to those who have a Stone in the Bladder, by the straining Efforts which they make to Piss; and frequently during the Operation for the Stone, this Intestine not only violently thrusts out the Excrements which it contains, but comes out it self, being stimulated by the Pains which the Patient endures in that Operation, which ought not to hinder the Operator from continuing his Course; for after that the Stone is extracted, he easily restores the Intestine to its place. The Gripping Pains caus'd by the *Dysentery* frequently force out this Gut, and at other times it is driven out by the grievous Pains of a hard Labour: To these extraordinary Efforts alledged as the Cause of this Indisposition, Authors add the Weakness or Palsy of the Muscles-call'd the *Erectors of the Anus*, as also the excessive abundance of Humidities which soak into these parts.

Cause of the coming out of the Rectum.

How to reduce it.

A Chirurgion cannot mistake this Distemper, since the first glance of the Eye discovers it; wherefore without losing any time in examining the Patient, or the Spectators, from what cause it proceeded, he must prepare himself to reduce it with all speed, to which purpose he is not to trouble himself to dispose the *Apparatus* 'till he has restor'd the Gut to its place. If he can quickly get some hot Wine, with that he is to wash the part of the Gut which is come out with a Linnen Cloth or a Sponge, then compressing it gently with his Finger, and thrusting it back he causes it to re-enter, which is sometimes very easily done. Those subject to this falling out, may themselves perform the Reduction, as those which have Descents often reduce them with less Pain than others do. Some Children by their continual crying render this more difficult, in which case the Chirurgion takes the time when the Intestine contracts it self by a *Vermicular Motion* which is proper to it; for his efforts would be vain, if he should shove it back at the time when 'tis enlarg'd by its *Peristaltic Motion*.

The greatest difficulty of this Operation is not the returning of this Gut, but the retaining of it in its place when reduced;

in order to which, as soon as the Reduction is finished, we lay on the *Anus* a *Bolster* which we cause some Person to hold, whilst we prepare the *Apparatus*, for fear the Intestine should start out in the interim.

The *Apparatus* consists in only two strong thick *Bolsters*, one Of the Ap- of which is a long one F, to be plac'd betwixt the two But- paratus. tocks, and the other a square one G, to be kept on the *Anus* with the *Bandage* like a T, mark'd H, whose top is slit into two parts, in order to pass along the sides of the Purfes of the Testicles, and to be fasten'd to the circular *Bandage* which surrounds the Body. The *Bolsters* are to be wetted in an *astringent Wine* prepar'd with *Wormwood*, *Galls*, *Pomegranate-shells*, *Allom*, and the *Green Fruit of Guaiacum*, all boil'd in red Wine. The Wine must be ready at hand; for if the Gut falls out again, at the moment the Patient goes to Stool, before 'tis reduc'd it must be wash'd with this Wine, which is to be heated every time 'tis us'd. This Remedy is excellent for the Cure of these fallings out of the *Rectum*; for at the same time that by its astringent quality it closes the Fibres of that Gut, by its heat it fortifies the erecting Muscles.

What is most troublesome in these sorts of Infirmities is, that every time the Patient goes to Stool the Intestine falls out again, or at least is ready so to do: To avoid which, we or- Divers Ex- der the Patient to sit at that time on a narrow distance be- pedients to twixt two Boards, that the Buttocks being thereby clos'd the hinder its falling out of the Intestine may be prevented, he must extend falling out his Legs, and strain as little as possible in the discharging of afresh. his Excrement. We may also on a single Plank make a hole about the Diameter of a half Crown, and around it place a small Roll or Cushion, which comprehending the circumference of the *Anus*, will hinder the falling of this Gut when the Patient goes to Stool: If it be a Child, its Mother, or she who has the care of it, by clapping two of her Fingers to the *Anus* when it voids its Excrements, will prevent the frequent falling of the *Rectum*: And to conclude, all the times which it comes out, it must be wash'd with the Wine above-mention'd, then restor'd, and always kept up with the *Bandage*, and a *Bolster* moisten'd in the same *Wine*, which will accustom it to continue in its place, as I have several times seen.

Some Authors are cruel enough to advise the application of Abuse of several actual Olive-pointed cauterising Irons red hot around cauterising. the *Anus*, to cauterise the circumference of that Part; they pretend by these means to consume the humidity which relaxes the erectory Muscles, and hope that the cicatrising which remain, closing the *Anus*, will hinder its falling down again. I never saw this Operation practis'd, and I believe if a Chirurgeon should be inclin'd to perform it, he would not find a single Person who would not oppose it, and with Justice, since 'tis possible to cure Diseases without making use of red hot

hot Iron, which strikes a horror even into those who do but hear it mention'd.

Blegny's
Invention.

Monfieur Blegny, who did not want for Inventions, would have us detain the Inteftine in its place with a *Turkey-Cock's Cram*, which is to be blown up in order to fwell its Bulk after 'tis introduc'd into the *Anus*, which hinders that Gut from defcending. But as this Machine muft be taken out and put in again every time the Patient goes to Stool, and it being on thofe occafions that the Inteftine falls down afrefh, I take it to be of very little ufe, and very inconvenient to be ufed, and that the rather becaufe Bolfters and Bandage answer the fame end, and are not fo troublefome.

Of CON-

ondyloma is deriv'd from *Kondylos*, which fignifies a Joint; and was given it by refemblance, by reason that the little Tumours which compofe the *Condyloma*, are like the Tumours made by the *Joins*.

and FUNGI.

The *Condyloma* is a *Tubercule* or callous Eminence which arifes in the folds of the *Anus*, or rather a fwelling and hardening of the wrinkles of that Part. Thefe Tumours frequently happen to the Orifices of the *Uterus*; they are caus'd by the Fluctuation of grofs and terreftrious Humours to this place, where we fometimes find Inflammation and Pain, and always a hardnefs which muft be foften'd by emollient Medicines.

Remedies.

We have feen it yield to thefe Remedies, and cur'd without being oblig'd to make ufe of Operation. But when general and particular Remedies prove unfucceffful, we muft have recourfe to the Hand.

Manner of
Operation.

We cannot exactly trace out the manner of operating, becaufe it depends on the Figure of the *Condyloma*; if its Basis is narrow, we are to tie it with a Linnen Thread or Silk, and having well tighted the Ligature at feveral times, wait its falling off of it felf: If the Basis be too broad to fuffer a Ligature, the Chirurgeon muft cut it off with Sciffars, holding it faft with his Pincers, and fo feparate it wholly at once. But if the Sciffars are not proper, becaufe its Shape is inconvenient, or 'tis too hard, he makes ufe of the Incifion Knife K, with which he cuts it off very near its Root; and if a great quantity of Blood iffues out, which moft commonly happens, by reason of the number of Veins which bedew the *Anus*, we flop the Flux with astringent Powders, and then drefs the Wound with Mundicatives, to wafte and confume its Roots, and procure a cicatrifing by Deficcatives.

Of the Cri-
fte about
this part.

About the Fundament there fometimes grow feveral Excrefcencies, which are call'd *Crista* or *Combs*, by reason that they refemble *Cocks Combs*; it very feldom happens, that we find one alone, there are generally feveral of them which border on the *Anus*. When thefe forts of *Crista* are fmall, and don't incommode the Patient, I fhould advife the leaving them untouched; but when they grow too big and troublefome, we

muft

must get rid of them, which is always by Operation; which is perform'd either by *Ligature*, *Cauterisation*, or *Amputation*.

Of these three the last is the best; by reason 'tis more expeditious and certain: The Chirurgeon takes a pair of Scissars, I, of *Amputation*, and in the other hand holds one of the *Criste*, which he cuts off close to the *Anus*, thus cutting them all off one after another; and when he has suffered a little Porringer or two of Blood to run off, in order to discharge the Part, he sprinkles on the Wounds astringent Powders to stop the Flux; and afterwards dresses all these small Wounds with such Ingredients as are proper to cicatrise them with the greatest Expedition.

Rhagades produce a sort of *Scissures*, *Chops*, or *Crevisses*, Of *Rhagades*, which appear on the *Anus*. The word *Rhagade* comes from the Greek Verb *Rizein*, to cut, because the *Anus* is all over intersected by these sorts of Clefts, which produce narrow long Ulcers, which very much incommode the Patient, especially when the *Anus* is forced to open it self to admit the Passage of the Excrements: The *Acrimony* of the Humours, and the hardness of the Excrements are the Causes of these Indispositions, which, in their beginning, are cur'd by desiccative Remedies, such as the Vulnerary Water; but growing old and confirm'd, they become hard and callous, and then their Callosity must be consum'd, in order to give us hopes of a Cure.

There are two ways of removing this Callosity, one is by *Two ways* Caustic, and the other by *Cauterising*. Some Practitioners of *Cure*, make use of corrosive and mordicant Unguents, others prefer the Incision Knife K, with which they renew and refresh these sorts of Ulcers. As for me, I advise the use of both these Means; to begin with the Incision Knife, with which the Callosities are to be cut in several places, and then to proceed to the use of less corrosive Unguents, than if we had at first began with those Remedies. By these means we compleat the Consumption of those Hardnesses with less Pain, drying the Part by little and little, and with proper Drugs we procure the cicatrising of the Wounds, which we have made or renewed.

There happens besides to the *Anus* a *Carneous Excrecence*, Of the *Fi-* which is call'd *Ficus*, i. e. a *Fig*; as also *Sarcoma*, and a *Fungus*, or *St.* *Mushroom*: 'Tis besides by the Vulgarterm'd *St. Fiacre's* *Fiacre's* *Disease*. This Carnosity rises and grows as Mushrooms do on *Disease*. Oaks, and comes in the Neck of the Matrix, and several other Parts of the Body; but those of the *Anus* are more difficult to cure, by reason of their Situation, the Humours flowing to them in great quantities, whence there issues out of it a very filthy stinking *Sanies*.

Cure.

The Operation consists in the Extirpation of the *Fungus*, which, in Process of Time coming to grow, would more and more incommode the Patient. We prepare the Body by general Remedies, as *Phlebotomy* and *Purgation*; then with the *Incision Knife K*, we cut off the *Fungus* near its Root; after which we apply to the Wound *Oyl of Vitriol* temper'd, *Powder of Savin*, and other Remedies, in order to consume the remainder of its Roots. If its Basis is small and tender, it must be bound with the *Thread M*, which must be guided by the *Forceps N*, and drawn tighter every day 'till the *Fungus* falls off.

Of the malignant
Fungus
common at
Rome.

There is yet another sort of *malignant Fungus*, rooted in the *Rectum*: There is an Hospital maintain'd at *Rome* for the Cure of Patients afflicted with this Indisposition. I have seen the dressing of these unhappy Wretches, in which the Chirurgeons spare neither Iron nor Fire, and the Cries utter'd by them do not move the Pity of either the Chirurgeons or Spectators, by reason the Sore is the Consequence of an infamous Converse with Men, as the Venereal Distempers are of the caressing of debauch'd Women, and because these obstinate Tumours are look'd on as an Effect of the Divine Justice, which punishes such as commit those Crimes. But *France* being so happy, as not to have these Distempers known in its Territories, I shall say nothing more of them.

Of the
PILES.

According to *Fabricius*, the Etymology of *Hamorrhoids* comes from the Greek Word *Hama*, which signifies *Blood*, and the Verb *Rheo* to *flow*, to express its being a Flux of Blood. *Thevenin* says, that they took their Name from a Serpent call'd *Hamorrhois* or *Flux of Blood*, whose biting excited a Flux of Blood in several places of the Body of the bitten Patient. They have imparted their Name to the *Hamorrhoidal Veins*, by reason this Distemper generally comes on the Extremity of the Veins of the Fundament.

Their several
Species.

The *Hamorrhoids* are painful Tumours, shap'd like *Varices*, full of goos's Blood, and proceeding from the Dilation of the Extremities of the Veins, surrounding the *Anus*. There are four sorts of them which differ amongst themselves, with regard to the Matter of which they are composed. We call those *Uval* which are full of pure and natural Blood, whose only Fault is excess in quantity. We term those *Morales*, which are produced from a thick, gross, black Blood: Those are still'd *verrucal*, which are hard and full of Adu'st and melancholy Blood; and *vesfical*, those which are form'd from a crude pituitous Humour. These Names are given these several Species, on account of the Resemblance which they bear to a *Grape*, a *Mulberry*, in *Latin*, *Morus*; a *Wart*, in *Latin* *Verruca*; and *Vesfca*, a *Bladder*.

Opinions of
the An-
cients.

The Ancients set up several other different Species of *Hamorrhoids*; they distinguished between internal and external, alledging the one to proceed from the *Vena Cava*, and the other from

from the *Vena Porta*, that the former voided pure, and the latter gross Blood; that those which proceed from the *Vena Cava*, purge the *Plethora*, and those from the *Vena Porta* the *Cacoehymia*. But the Circulation of the Blood informs us, that these Veins carry nothing to the *Anus*; and that on the contrary, they only return back into the *Vena Cava* the Blood sent thither by the *Arteries*. So that all these Veins are filled with the same Blood, which scarce being able to reascend, and staying in these Vessels, by slow degrees dilates them, and forms the Tumours which we call *Hæmorrhoids*.

Authors assign several Causes of the *Hæmorrhoids*, and several Of the Original useless Arguments have been form'd; but without troubling ourselves with what the Ancients have said, we need only examine the Mechanical Structure of the part, in order to be inform'd truly how the Piles are produced.

In my Anatomy I have shewn, that the *Hæmorrhoidal Arteries* send out more branches to the *Rectum*, than are requisite for its nourishment, that a great number of these small Arteries terminate at the Glands with which they are interspersed; that these Glands separate and filter part of the Impurities of the Blood, which are dispers'd by the Vessels which perform the excretion of these Filtrations into the *Rectum*, so that this multitude of Conduits is necessary to the Purification of the Blood. I add, that we pay very dear for this Service which the *Hæmorrhoids* do us; and, indeed, the thinnest Lympha separating it self from the Blood, when it passes from the *Hæmorrhoidal Arteries* in the Veins of the same Name, it ought to be thicker and heavier than when in the Veins, and consequently cannot reascend without difficulty; the rather, besides that there being no Muscles, nor any part which can assist its advancement to the great Trunks, because the *Rectum* is lodg'd in a bony Basin, which will not allow any Compression to favour its course, as the Muscles do that of the Blood which is obliged to reascend from the Extremities: This Humour cannot mount upwards, unless when the *Hæmorrhoidal Veins* being extremely fill'd by the Arteries, which incessantly furnish them, discharge themselves into the *superior Veins*, which empty themselves with more ease. The Efforts made on any occasion whatsoever, and particularly for the expulsion of the Excrements, contribute very much to the production of the *Hæmorrhoids*, because that instead of helping on the return of the Blood, they force it towards the *Anus*, where being obliged to remain in the *Hæmorrhoidal Veins* as in a Sack, it constrains them to extend, and cause this cruel Disease, from which scarce any Person is exempt.

The Piles are easily known, with a touch of the Finger, or a cast of the Eye, we discover Tumours of a different size. Some are as big as Hasle-nuts, and others as large as small Eggs; their Colours also vary in proportion to the length of time

time which the Blood has continued there. These which I am speaking of, are the *external Hemorrhoids*; besides which I know no other; for as for those stiled *Internal*, I never saw any of them, nor have I any Notion how they can possibly be form'd. I know only that several call other Indispositions which affect the *Rectum*, by the Name of *internal Hemorrhoids*.

Of their
Cure.

The cure of the *Hemorrhoids* is very difficult, not to say impossible. Authors have propos'd two methods, which are the Palliative and Eradicative: But I should never advise the Chirurgeon to undertake any farther than the former, it not being in the power of Physick and Chirurgery to compass the latter.

Before the Chirurgeon ventures to undertake any thing, he must examine whether the *Hemorrhoids* are *obscure* or *fluid*. We call those obscure from whence no Blood issues, and those fluid which void that Liquor from time to time. I say from time to time, because they do not emit a great quantity, unless when the Patient goes to Stool, and what comes out the rest of the Day, amounts to no more than a draining, which only stains his Linnen.

When the Piles issue forth only in a moderate degree, the Patient is not to be touch'd, by reason 'twould be fully as prejudicial to a Man labouring under this light Indisposition, to attempt to Cure him, as to a Woman to suppress her Courses. 'Tis the Foundation of the Health of many Men, some of which have them as regularly as Women their Terms, and also find themselves indispos'd when this Flux has been retarded some Months. But when 'tis excessive, when it weakens and ematiates the Patient, and turns his Complexion to a fallow Tawny, Endeavours are to be us'd to mitigate their Flux, but not to suppress them; and in this case we are oblig'd to the observance of a twofold *Regimen*, the one *Universal*, and the other *Particular*. By the former we understand the Course of Diet, which avoids all Edibles which produce too much Blood; Phlebotomy, which evacuates it; the Potions and Drinks which dilute and dulcifie the Acrimonious Humours, and the Patient's sedulously avoiding all manner of Melancholy and Angry Transports; and lastly, the use of Styptics, and those Medicaments which thicken the Blood, as Rice, Quinces and substantial Wine, as also Chalybeat Waters. By the *Particular Regimen* we mean the Remedies apply'd to the part, which are to be Astringents, as small Bags fill'd with Sage, and Bran, fry'd with Oyl of Roses, Myrrhe, &c.

Application
of Reme-
dies.

Tho' the *fluid Hemorrhoids* are not fluid, but attended with Inflammation and Pain, we must begin with asswaging the latter, which is done by the application of emollient Remedies to this part, of which sort are *Pulp of Cassia*, *Pomatum* compos'd of *Populeum*, and the Yolk of an Egg, Milk in which has been
boild

boil'd *Chervil*, *Plantain*, and *white Mulleyn* or *Verbascum*, and several other Ingredients whose number is infinite, and of which there are as many sorts as for the Gout and Tooth-ach. The Patient must also be blooded, to prevent the Blood repairing in any quantity to that part.

When after the use of all these Remedies the *Hæmorrhoids* Of the use don't diminish, but the Pain and Tension remain, or increase, of *Leeches* we must make use of means to empty those Tumours; which and the are of two sorts, either the application of *Leeches*, or Punction *Lancet*. by the *Lancet*. The use of *Leeches* is preferable, as well because the Patient is less afraid of them than the *Lancet*, as by reason they make a smaller Orifice, which is easier cured: A *Leech* is then to be apply'd to each *Hæmorrhoid*, and left to draw 'till it be emptied, after which it is made to fall off, then the Chirurgeon makes use of a *Liniment* compos'd of Oyl of Eggs, powder'd Ceruse, and calcined Litharge, laying on the *Hæmorrhoids* a Pledget thoroughly moisten'd in this *Liniment*, a Bolster above that, and over both a Bandage, which a little pressing them, hinders their speedy filling again.

If the *Leeches* happen not to bite, or we believe the Blood to be too thick to be drawn by them, so that we are forc'd to make use of the *Lancet* O. the Orifices must be made at the lowest place to empty them the more commodiously, and the punctures are not to be made larger than just what is necessary to give issue to the Blood; which done, the *Liniment* and *Apparatus* is apply'd as above.

The Patient finds relief immediately after the emptying the *Hæmorrhoids*, and the Cessation of Pain and Tension afford him the refreshing gust of a very agreeable ease; but there yet remains a continual draining thro' the Orifices which becomes very troublesom, though there is none but must own that 'tis preferable to the former Pains, and the pernicious Consequences which would attend them, if not suppressed. Notwithstanding all which, we meet with some Patients who growing impatient under the offensive foulness of this Distemper, forget the essential Reasons which should dissuade them from desiring an eradivative or perfect Cure; and cost what it will, resolve to oblige us to perform the Operations necessary to the utter extirpation of this Disease: In this case the Chirurgeon is to excuse himself by representing to the Patient, that besides the Pains of the Operation, yet more considerable ills may happen to him than those he is desirous to be exempted from; also acquainting him, that all our Predecessors agree in prognosticating Diseases to fall on those who are perfectly cured of the Piles; and withal proposing to him the Expedient agreed on by all Chirurgeons, which is to leave open one of these small Tumours, in order to retain a little drain, and not to expose the Patient to all the Diseases with which the most famous Chirurgeons menace them.

When

The Fourth Demonstration

- When the Patient is resolutely determin'd, he is to be prepar'd by frequent Bleeding in proportion to his Strength, and by some Purgations. The Chirurgion gives him a Clyster a few Hours before the Operation, to empty the *Rectum*, and then obliges him to lye on the edge of the Bed, on his Belly, with his Feet down, and his Buttocks turn'd to the Light, which he causes to be separated from one another by a Servant: Then taking in his Left Hand, with the Forceps L, the Purse of each *Hæmorrhoid*, he cuts them off one after another with the Scissars I, which he holds in his Right Hand, remembering to leave one of the least remaining for the preservation of the Patient's Health, as we have already hinted. If any of these Purses should be left, because 'twas impossible to cut them by reason of the Blood interrupting the Operation, 'tis afterwards to be eaten off with Oyntments proper to that end. The *Apparatus* is like that of the precedent Operations, and that which I am going to shew you on the *Fistula* in the *Anus*.

FIGURE

FIGURE XXV. For the FISTULA in the ANUS.



A *Fistula* is called by the Greeks *Syrinx*, a *Flute*, deriv'd from *Of the Fl.* the Verb *Sirizein*, to *Whistle*, and that *Metaphorically*, by *STULA* in reason this Distemper has a long strait Cavity like that of *ANO*. *Flutes*: It is defin'd to be a deep and cavernous Ulcer, whose *Definition* entrance is narrow, and its bottom broader, and from it issues of it. a sharp and virulent *Pus* or Matter, and is almost always attended with a Callosity.

Fistula's come in several parts of our Bodies, after Abscesses and Wounds of the Breast, the lower Belly and Joints; and
more

more frequently in the *Anus* than any other part. 'Tis the Operation perform'd on the last which I shall demonstrate to you at present, referring you for the Cure of the others to that of *Fistula's* in general.

This Disease seems at present to be more rife than formerly; we every day hear of Operations performed on such Persons as did not before seem afflicted with it; 'tis a Distemper grown in fashion since that which the King had, and on which the Chirurgeons were forced to perform the Operation in order to its Cure. Several of those who before that time carefully conceal'd their having it, are not now asham'd to publish it, and some Courtiers have even chosen *Versailles* for the Place where they will undergo this Operation, because the King should be informed of all the Circumstances of their Indisposition. Those who have only a small draining run immediately, and turn up their Posteriors to a Chirurgeon, for him to make Incision; I have seen above thirty who desir'd to have the Operation perform'd, and whose Folly was so great, that they seem'd angry when they were assured that they did not at all want it.

Cause.

The *Fistula* in the *Anus* is always a Consequence of an Abscess in that Part: It begins with a small hardness, which quickly increases and ripens; 'tis ordinarily taken for an *Hæmorrhoids*, whence the shewing it to the Chirurgeon is often neglected. This Abscess breaking either in the Intestine, or on the edge of the *Anus*, the Patient finds himself eas'd, and then believes himself cured without the Chirurgeon's help, in which he is mistaken; for the Matter having made but a small Orifice to run out, remains in the Place where there is a Vacuity, and from thence continually issues out, but is never cur'd without opening the Sack or Purse to cleanse it, and procure the Return of good Flesh to fill it up intirely.

The Operation not to be deferred.

When the Patient requires the Assistance of the hand before the Abscess is broken, the Chirurgeon is not to stay 'till it breaks itself, because the Matter will corrode the whole Circumference of the Part to make its way; and the Intestine being more tender than the Skin, it will rather make an Orifice in that, than pierce the Skin, in order to issue out; and besides, this Corruption continuing amongst the fleshy Parts, it separates them; so that the Intestine being denudated, can never reunite with the neighbouring Flesh, without Operation. To prevent these Symptoms, we must then early open these Abscesses, and not wait for a great Fluctuation as in other Abscesses, but they must be taken green, that is, before they are perfectly ripe. We must not make the Aperture with *Cauteries*, for fear of losing time, and by the Pain which they give, furnishing an Opportunity to a greater Settlement of Humours in that Part, and to Mortification; for they gangrene in a very small time after. The Chirurgeon then first of all, with the

Lancet A, makes an Orifice to evacuate the Matter; then with the Scissars B, cuts the side which has the most room, sufficiently to convey the Remedies to the bottom of the Cavity, in order to cleanse and heal it. But if on thrusting a Finger into the Wound which he shall have made, and another into the *Anus*, he finds the *Rectum* denudated or strip'd, which he will discover by the thickness which he feels betwixt his two Fingers, he must then cut that Intestine to the Extremity of the Abscess, in which he is to guide himself by insinuating one of the Branches of the Scissars into the Wound, and the other into the *Anus*, in order to cut all that is betwixt them both; also he must cut the Gut a little more forward than the bottom of the Abscess, because that he ought rather to risque the making the thickness of two Crowns larger than necessary, than the thickness of one less: The Abscess thus well open'd, is to be dress'd, as we shall presently shew in the Operation of the *Fistula*.

This is what is to be practis'd to avoid a *Fistula*; but when 'tis form'd, either by the Negligence of the Chirurgeon, in not sufficiently opening it, or the Obstinacy of the Patient, who would not before consent to its being open'd; the Nature of the *Fistula* must be examined, before the Operation is concluded on.

There are laid down three sorts of *Fistula's* in general: The first, when the Ulcer is open without, and not within; the second, when it pierces the Intestine, without issuing outwards; and thirdly, when it communicates without and within. The first are apparent, and easily discover themselves; and the Probe which is introduced, informs us whether they are superficial or deep. We are ascertain'd of the Existence of the second, when we find corrupt Matter issue out with the Excrements, and particularly when an Abscess has preceded; and by thrusting the Fore-finger, we are satisfied whether the Orifice be distant from or near the *Anus*. The third are discovered by thrusting the Probe C into the *Fistula*, and the Finger into the *Anus*; for if we feel the end of the Probe with our Finger, we may depend on't, that the Gut is pierced; the small Dilator D introduced into the *Anus*, is very proper to search it: We call these last *Fistula's* compleat ones; and the first imperfect, because they have but one Orifice.

Every one of these Species is also subdivided into several sorts, some of which are near the *Anus*, others one or two Fingers breadth distant from them: Some are at the edge of the Intestine, and others deeper in: We find some with one Cavity, and many with several like a Goose's Foot; and these various Cavities are nam'd *Coney-boroughs*: Some incline towards the *Rectum*, and some towards the Bladder, or the Hipbone; to conclude, they are either recent, or old and callous.

Three sorts
of *Fistula's*.

Subdivision
of them.

The

Prognostic.

The Chirurgeon is to prognosticate according to the Nature of the *Fistula*, and without promising more than he can perform, to be always dubious; for what appearance soever there may be of Success, there frequently happens some Accidents, which hinder the accomplishing of what he has promised.

Three ways of curing them.

Three ways of curing *Fistula's* are proposed, viz. *Caustics*, *Ligature* and *Incision*: After we shall have examined them all three, we will decide which is the best.

About thirty years since, one *le Moyne* at *Paris* acquired a great Reputation for the Cure of *Fistula's*; his Method consisted in the use of *Caustics*, that is to say, with a corrosive Unguent, with which he cover'd a small Tent, which he thrust into the Ulcer; by which he daily by little and little consumed the Circumference, taking care to enlarge the Tent daily; so that by widening the *Fistula*, he discovered its bottom: If he found there any Callosity, he corroded it with his Ointment, which also served to destroy the Coney-boroughs; and at last, with Patience, he cur'd many. This Man died old and rich, by reason he made his Patients pay very well for their Cure, in which he was in the right; for the Publick value things no otherwise than in proportion to the Sum which they cost: Those who were affrighted at the Thoughts of the Scissars, threw themselves into his hands; and though the number of Rascally Pretenders is very great, they never yet want Practice.

Operation by Ligature.

Thevenin prefers Ligature to the two other ways of curing a *Fistula* in the *Anus*: He affirms, that he never knew it miss of full Success, and advises it to be thus performed. The Patient is to stand on his Feet with his Body bent, and resting on the edge of the Bed, he must first of all be ordered to open his Legs and Thighs, which the Chirurgeon must cause to be held firm, by two Servants, for fear he should close them again, and grow weary during the time of the Operation: The Patient thus disposed, the Chirurgeon thrusts into the *Anus* the Forefinger of his Left-hand, after having rubbed it with Oil of Sweet Almonds, or some other oleaginous Matter, to procure its more easie Entrance; then in his Right-hand he takes the Probe E, made of softned Brass or Silver Wire, and threaded with the double brown Flax Thread F, or with an Hair out of a Horse's Tail, in order to cut the more readily: He introduces this Probe into the Orifice of the *Fistula*, and meeting the end of it with his Finger already in the Intestine, he bends it back, and draws it out at the *Anus*, bringing with him one of the ends of the Thread; which being come out, with that, and the other end which runs through the *Fistula*, he makes a Ligature with a slipping Knot, and daily draws it tighter, 'till it has cut through the Place which it contains. If the *Fistula* was imperfect, and the Intestine not yet pierced, he must not make any Difficulty of piercing it with the Extremity of the

the Probe, which is easily done, by resting it on his Finger which is in the *Anus*; after which he bends the Probe, and ties the two Ends of the Thread as before directed.

The third way is by *Incision*: Which being the most univer- *Use of In-*
sally practis'd and follow'd, I shall enlarge more on that, than *cision*.
the others, to avoid the Omission of any Circumstance, and in order to instruct young Chirurgeons the more exactly. To this end then, 'tis first of all to be observed, that before the Operation the time is to be chosen; for in Summer or Winter, the Excess of Heat or Cold may oblige the Chirurgeon to stay 'till the Air grows moderate, and the Operation may be deferred without any Danger, whilst the *Fistula* is recent: He must then prepare the Body by Bleedings and Purgations adapted to the Patient's Constitution; and having fix'd the Day and Hour, he is to dispose the *Apparatus*, such as you see in the twenty fifth Plate.

Two hours before the Operation, a Clyster is to be given, *Preparati-*
in order to empty the Intestine, for fear the Strains which it *on of the*
may excite may otherwise force the Excrements to fly into *Subject*.
the Chirurgeon's Face, as it sometimes happens; for which reason also he should not place himself directly behind the Patient, but a little on one side, to avoid this Fufee which will prove very disagreeable: The Patient is to be plac'd on the edge of the Bed, with a Pillow under his Belly, in order to raise up his Buttocks, which must be turn'd to the Light, his Thighs open'd and held by two Servants, to prevent his stirring in the time of the Operation.

Secondly, During the Operation, the Chirurgeon, as in the *Third way*
Ligature, must be provided with Oil, G, with which he must *of Opera-*
rub the Fore-finger of his Left-hand, in order to introduce it *tion*.
into the *Anus* without Pain; and in his Right-hand he takes the Stiletto H, which he introduces into the *Fistula* by its exterior Orifice, guiding it along 'till it comes out at the Hole in the Gut, which he will feel with his Finger which is in the *Anus*; then with the end of the same Finger he bends the Stiletto, and causes it to come out at the Fundament in such manner, that all that is to be cut is grasp'd betwixt its two Branches: Then, with the Incision Knife I, or the Scissars K, he cuts at once or twice the Flesh contain'd betwixt the two Branches of the said Stiletto, assuring himself that he has cut all that he ought, when that Instrument is intirely loosen'd and disengag'd: He then thrusts his Finger to the bottom of the *Fistula*, which frequently is full of Cavities or Coney-boroughs, which as far as possible he ought to open to their bottom; and if with the Finger he finds any Callosities in the *Fistula*, with the same Incision Knife he makes several small Incisions on the hardened Places, that the Remedies may eat and consume them: Some, instead of the Stiletto, make use of the hollow Probe L, which they bend in the same manner, and its Gutter helps them to guide the Point of the Scissars.

Q

Thus

Perfecting
of this
Operation.

Thus all good Practitioners have hitherto perform'd this Operation; but it has of late Years been improv'd, and ways have been discover'd of performing it more expeditiously: There has lately been invented a curve Incision M, at the end of which is fasten'd a Stiletto N, so that instead of two separate Instruments they make use of but one, which is both a Stiletto and Incision-Knife together, which they use in the following manner. By a small Incision made with the common Incision-Knife they enlarge the external Orifice of the Fistula, in order to introduce the more easily the Incision-Knife with the long Stiletto, which is pointed, and of a soften'd Metal, that it may be bent without Pain; this Incision-Knife must be curve, thin, narrow, having the edge cover'd with the Chape O, of Pastboard or Silver, that it may be thrust into the Fistula without hurting the Patient; after which, pursuant to the old way, the Chirurgeon must thrust his Finger to the bottom to feel for Cavities or Callosities, which are to be remedied as we have already told you.

Thus you have seen two ways of performing the Operation on the perfect Fistula; they are both of them equally good, because they open the Fistula to the bottom, and differ no otherwise than with regard to the Instruments which are used in them. Let's next see what is to be done to imperfect Fistula's.

Practice on
imperfect
Fistula's.

I have already inform'd you that in the performance of the Operation with the Ligature, when the Intestine is not open, it must be pierc'd, to contain all the Flesh which the Thread is to cut; and 'tis in this absolutely necessary to pierce it with the Stiletto, without which the Operation will be imperfect: But the Intestine is so tender that it makes but a very small resistance: When the Stiletto has made a hole in the Intestine in the bottom of the Fistula, 'tis to be drawn out by the *Anus*, and continue the Operation in the manner which I have just shewn.

Of the Fi-
stula not
open with-
out.

If the Fistula is open only in the Gut, and not outwards, the Operation is more difficult, for to perform it we are oblig'd to find a way to make an external Orifice: To this end the Chirurgeon examines whether there is not some small Tumour around the *Anus*, which indicates that it is the external end of the Fistula, and if we don't find on the Skin any alteration, or redness which marks the empty place; by reason on any such appearances 'twill be proper to open those places to thrust the Instrument thro' them, and continue the Operation as above. When nothing is to be seen without, which can discover to us where we ought to open it, we take the Stiletto P, which is folded double, and one of whose ends is longer than the other; holding it by the longest end, we then introduce it into the *Anus*, and at the moment that we draw it back, guiding it with the Finger already engag'd

in the Intestine, we endeavour to get the shortest end of the said Stiletto into the Orifice of the Fistula, then drawing it to us, we feel without the end of the Stiletto, on which we open the part, and with the Instrument which we slide into it finish the Operation.

Thirdly, after the Operation the Wound must be dress'd *Dressing of the Wound.* with a large Stopple Q, shap'd like a Tent, which is to be moisten'd in a Liniment, compos'd of Oyl and the Yolk of Eggs, and forc'd into the *Anus*, to widen the separation of the Lips of the Wound, and afterwards lay on the Pledgets R R, cover'd with the same Liniment: The Plaister S, the long Bolster T, then the square one V, must all be apply'd in their order, and fasten'd by the Bandage X. The Patient must be put to Bed, or left to compose himself to rest 'till the Evening, when the Chirurgeon takes from him three small Porrengers of Blood, to avoid a fresh settlement of Humours on the part affected.

These sorts of Wounds are very troublesome to dress, by reason that the part affected is the passage of the gross Excrements, and that a flux of the Belly supervening the Operation, obliges the frequent taking off the *Apparatus*, and dressing. For which reason the Chirurgeon leaves an Apprentice to lye in the Patient's Chamber, in order to dress the Wound as often as the Patient goes to Stool: But the Operator must endeavour to regulate this Evacuation, so that it may not happen above once a-day, and then he must send an Apprentice an Hour before to take off the *Apparatus*, that the Patient being seated on a close Stool, may continue some time there in order to obtain a good Stool: After the Patient has emptied his Intestines, the Wound is to be wash'd with warm Wine before 'tis dress'd. The Chirurgeon always makes use of a Stopple cover'd with a very strong Digestive, to cleanse it from and prevent the growth of proud Flesh, which frequently happens in these parts; the same course is to be daily continu'd, carefully avoiding the lessening of the Stopple faster than the bottom of the *Fistula* fills with Flesh; next we dry up the Wound, and endeavour to bring it to cicatrise well.

'Tis not difficult to decide which of these three ways is to be prefer'd. The Caustic causes a continual Pain for five or six Weeks, during which time we are oblig'd to make use of it. The Ligature is long in cutting the Flesh thro', and must without fail be tighted every Day, which is not done without Pain. Incision indeed inflicts a more poignant Pain, but of so short a duration, that it ought not to alarm a Person who is willing to be cur'd without danger of any relapse; for it not only accomplishes in a Minute, what the two others don't perform in less than a Month, but yet the Cure that way is certain, whereas 'tis but dubious by the others.

These Reasons determin'd the King to chuse the Incision, after having examin'd all other Methods propos'd to him for the cure of the Fistula, of which I will relate the History in few Words.

*History of
the Fistula
in Ano
which hap-
pened to the
French
King.*

In the Year 1686 there arose near the King's *Anus* a small Tumour, inclining towards the *Perinaum*: It was neither inflam'd nor very painful. It grew slowly, and after ripening, broke of it self, by reason that the King would not suffer Monsieur *Felix*, his Principal Chirurgeon, to open it, as he propos'd. This small Abscess was attended with the ordinary Consequences of those not sufficiently open'd, to admit the application of Remedies to the bottom of the Cavity; there was only a small Orifice, thro' which the Matter run, it continu'd to suppurate, and at last became fistulous.

The sole way left of curing it was Manual Operation; but the Great cannot always be brought to yield to it. A thousand Persons propos'd Remedies which they pretended to be infallible, and some of them which were concluded to be the best were try'd; but none of them succeeded.

His Majesty was told that the Waters of *Barege* were excellent in these Cases, and 'twas also reported that he would go to those Waters; but before taking that Journey, he thought fit to try them on several Patients; four Persons were found who were afflicted with the same Distemper, and sent to *Barege* at the King's Expence, under the Direction of Mr. *Gervais*, Chirurgeon in Ordinary to his Majesty: He made the necessary Injections of this Water into their Fistula's for a considerable time, and us'd the proper means for their Cure, and at last brought them all back, as far advanc'd towards that end as when they first went thither.

A Woman reported at Court, that going to the Waters of *Bourbon* in order to be cur'd of a particular Distemper, she was by the use of them cur'd of a Fistula, which she had before she went thither. One of the King's Chirurgeons was sent to *Bourbon* with four other Patients, who return'd in the same Condition which they went.

A *Jacobine Fryar* applying to Monsieur *Louvois*, told him that he had a Water with which he cur'd all Fistula's; another boasted of a never-failing Ointment, and yet others propos'd different Remedies, alledging the Cures which they pretended to have done. That Minister determining to neglect no means in order to the procuring a restauration of a Health so important as that of the King, caus'd several Chambers to be furnish'd, in which he placed Persons afflicted with Fistula's, and caused them to be treated pursuant to the several Methods of the boasting Pretenders to cure them, in the presence of Monsieur *Felix*. A Year was spent in these various Essays, and not one Patient cured.

Monfieur *Beffiere*, who examin'd the Indifpofition, being ask'd his Thoughts by the King, freely answer'd his Majefty, that all the Remedies in the World would prove vain without manual Operation.

At laft the King, to whom Monfieur *Louvoy* and Monfieur *Felix* gave an Account of what had pafs'd, feeing no hopes of being cur'd any otherwife than by Operation, on which Monfieur *Felix* continually infifted, determin'd for it; but would not acquaint any Perfon with his Refolution: He delay'd it 'till his return from *Fontainebleau*, and one Morning had it perform'd when nothing of that nature was fufpected by the Courtiers, who going to attend the King *Levée* were inform'd that he had undergone the Operation, and refolutely fuffer'd all the Incifions which Monfieur *Felix* thought proper to be perform'd.

This happen'd on the 21^{ft} of November, 1687. Monfieur *The Perfons Felix*, to whom the King had left the liberty of appointing prefent at what Chirurgeon he pleas'd to affift him, chofe Monfieur *Bef- the Opera- fiere*, who was accordingly prefent at this Operation, where tion. befides were only Monfieur *de Louvoy*, and the two Phyficians Dr. *Daquin* and Dr. *Fagon*. The cicatrifing was very well manag'd, and the King perfectly cur'd. His Majefty alfo Royal- Rewards ly recompens'd all thofe who render'd him Service whilft un- beftow'd by der this Indifpofition: He gave Monfieur *Felix* fifty thoufand the King on Crowns, Monfieur *Daquin* an hundred thoufand Livres, Mon- thofe em- fieur *Fagon* twenty four thoufand Livres, Monfieur *Befiere* ploy'd in forty thoufand Livres, and to each of his Apothecaries, in this Cure, number four, twelve thoufand Livres; and to one *Raye*, Monfieur *Felix*'s Apprentice, four hundred Piftoles.

The End of the Fourth Demonftration.



THE
Fifth Demonstration
OF
Chirurgical Operations.

*Of the Operations practised on the Breast
and Neck.*

Of the EMPYEMA.

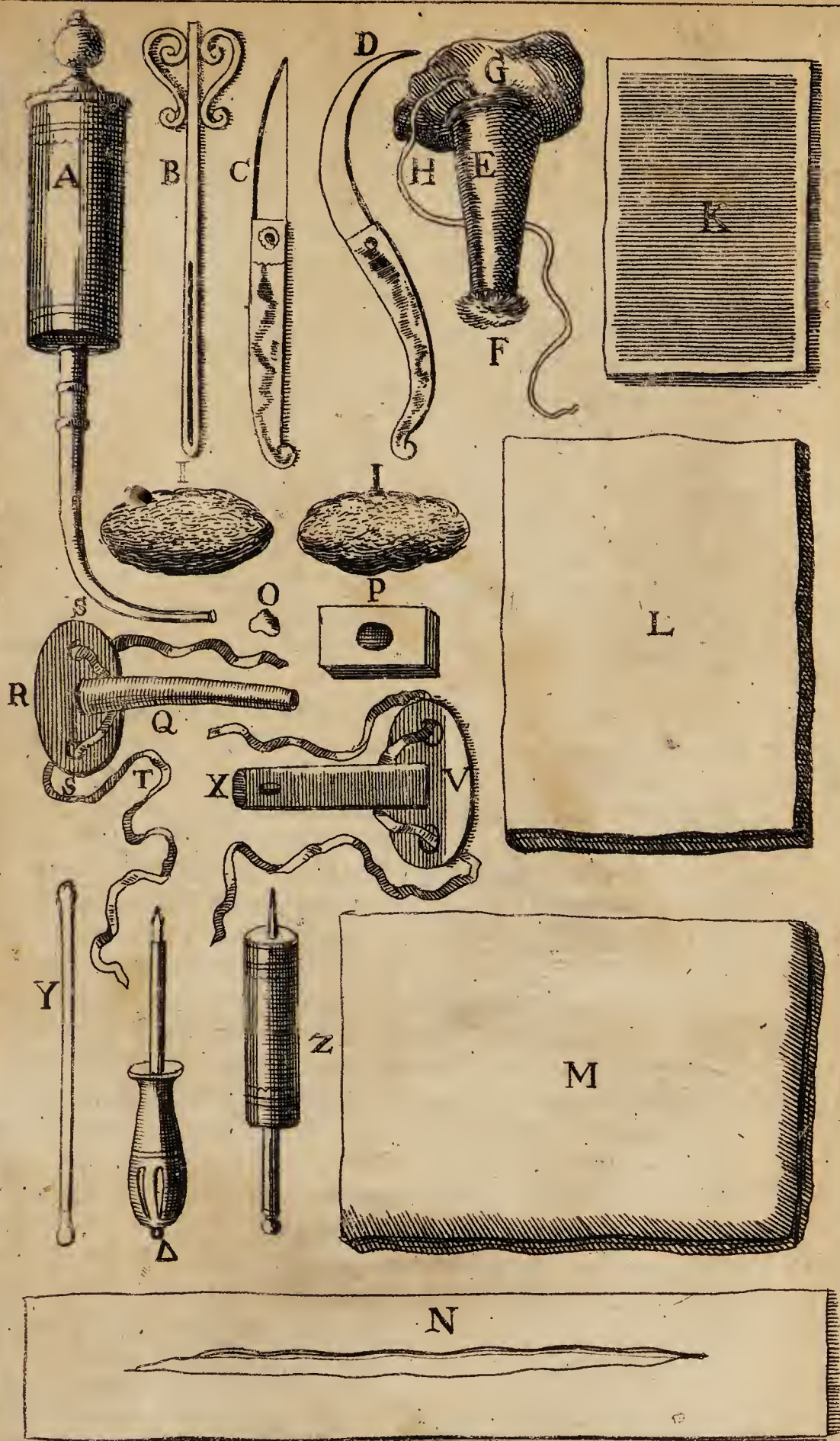
GENTLEMEN,



THE Order which we have prescrib'd our
selves, directs us, that after we have demon-
strated all the Operations practised on the
Lower Venter, we should proceed to shew
you those performed on the Breast and Neck,
in order to come to those of the Head, and
finish with those of the extreame Parts.

Operations peculiar to the Breast. The Breast is afflicted with its peculiar Diseases; and conse-
quently has also its proper Operations, which are particularly
adapted to that Part; the principal of which is that of the
Empyema, with which we shall now begin.

*Whence the Word Em-
pyema de-
rived.* Most Authors regarding the Etymology of *Empyema*, which
expresses a change or alteration to Pus, or Sanies, tells us, that
the Word is taken for a Transmutation of Matter into Pus in
what part of the Body soever it happens, and particularly for





a Collection or gathering of *Pus* in the Cavity of the Breast; but the Custom of understanding it to be meant of an Orifice which we are obliged to make in the Breast, in order to draw out Blood, *Pus* or Water, has prevail'd. This Aperture I shall then call an *Empyema*; and by no other Name is this Operation known to Practicioners. So that when I speak of the *Empyema*, I mean a Wound made at the lower part of the Breast, betwixt the two sides, to give issue to the Matter distributed in its Cavity. Three sorts of Matter oblige us to proceed to the *Empyema*, viz. Blood, which, issuing from some of the sanguinary Vessels which have been cut, falls on the *Diaphragma*; *Pus* dispersed there after a Plurisie, or Water gathered by slow degrees in a Dropsie: These are three different Occasions of having recourse to the *Empyema*, and in which 'tis absolutely necessary; but the most pressing of all is, when by reason of a Wound in the Lungs, the Blood falls into the Breast, whose Cavity it soon fills, and endangers the suffocating the Patient in a little time, if we don't give issue to that Humour by an Aperture, which is not to be deferred; which engages me to shew you that Operation before I entertain you with the other.

Necessity of this Operation.

Some Wounds in the Breast don't penetrate into its Cavity, and then they are regarded as simple ones, others are penetrating ones; and of these last, some are without LæSION of the internal Organs, in which case they require no more than reuniting, and others are with LæSION of the contain'd Parts, and those either without shedding any Blood in the Breast, or accompanied with Blood run into that middle Region: 'Tis of these last which I am to treat, because they cannot be cur'd without an *Empyema*, which evacuates that Liquor, with which the Patient would be suffocated, if not let out.

Variety of Wounds in the Breast.

There are three ways of discovering the Wound to be penetrating, the Touch, Sight, and the Probe. If by feeling about the Wound we discover an *Emphysema*, that is, an Inflation like that of Animals which are blown up after they are kill'd, 'tis a sign that the Wound has penetrated into the Cavity, it not being possible for this Inflation to proceed from any other Cause, than the Air; which being forc'd out by the Lungs, has dispers'd it self into the Spaces of the Muscles of the Breast, and under its Teguments. By Sight we observe, whether the Wound is large, and whether it has penetrated; for if the Blood which escapes is render'd frothy by the Air which mixes with it, and makes a Noise at its coming out of the Wound, both of them being hurried out with some Rapidity by the Lungs which extend themselves, or by the Muscles which contract the Breast; when we cannot doubt of the Cavity being open, and also that the Lungs are wounded. Some Practicioners hold a lighted Candle near the Orifice; if the Flame wavers or laves, 'tis a Sign that the Thrust has penetrated the Breast, the

Signs of a penetrating Wound.

Most certain Proof of the Wound.

Air which comes out being the only Cause of that small Motion. Others say, that if the wounded Patient be very weak, a Looking-glass is to be put before the Wound; and if it tarnishes, 'tis a Sign that Air comes out, and that the Wound is penetrating: But the most certain Proof of it is by the Probe; which if upon its Introduction enters the Cavity of the Breast, there is no room left to doubt that the Wound has penetrated. Yet though frequently we cannot find the way which the Weapon has made, we ought not to conclude the Wound confin'd to the Surface; there are some narrow Swords, which, entering only obliquely, make so small a Wound, that 'tis not possible to guide the Probe into it, and particularly if the Patient was on his Guard when he receiv'd the Thrust: In this Case the Patient must be plac'd in the same Posture as when he receiv'd the Wound; and if the Probe does not then enter, the Skin is to be externally dilated without Delay, when there appear other Signs of the Inwards being hurt.

How to know whether there be any Effusion of Blood.

'Tis not enough that we know whether a Wound is penetrating or no, we must also be satisfied, whether there be any Blood spilt in the Breast, of which we are informed by three Particulars. First, The Situation of the Wound: Secondly, The Excretions: Thirdly, The Accidents or Symptoms which accompany it.

Anatomy informs us, that an Intercoastal Artery and Vein are plac'd in a Dent which runs along the lower part of each side: If the edge of the Weapon which gave the Wound has cut the Intercoastal Muscles directly under the Side, it must have open'd these Vessels, from which ensue an Effusion of Blood into the Breast.

Signs of a Wound in the Lungs.

If the Wound is large, and there issues out a great quantity of Blood, 'tis a sign that it must have some in the Cavity; and chiefly, when the Chirurgion hears a hissing Noise at the Orifice, caused by the Air which comes out of it, which denotes a Wound in the Lungs; which being full of Vessels, cannot be wounded without the Aperture of some of them, which pour the Blood into the Breast.

We discover the Effusion of Blood by the Accidents which happen immediately after the Wound, we find a heavy weight lying on the *Diaphragma*, caus'd by the Ponderosity of the Blood which is there spilt; a strong Tension of the Breast about the Wound; the Patient can scarce breath, and frequently falls into a *Syncope*.

Wounds in the Breast don't easily heal.

If, by reason these Signs don't appear, the Chirurgion concludes that there is no Effusion of Blood, he must endeavour to cure the Wound as fast as he can; and tho' he be never so careful, that will not be accomplished so soon as is to be wish'd, because Wounds on the Breast are more difficult to cure than others, for four Reasons: The first, because of the Entrance of the Air through the Wound without being modified or warm'd

warm'd, as that is which passes through the Mouth, must unavoidably incommode the Lungs; Secondly, by reason that the continual Motion of the Breast opposes and obstructs the re-union which ought to be made; The third consists in the Difficulty of conveying Medicines to a Wound of the Lungs; and the fourth is, That the Matter has not a free Passage to come out of its self, and is not drawn out without Difficulty, when at the bottom of the Breast.

We are not to take up with the Opinion of some of the An- *A Mistake*
cients, who would have us close all Wounds of the Breast by *in Practice.*
Suture, alledging that the Air which enters from without is extremely pernicious; we shall also reject the Sentiment of those who advise us to keep the Wounds long open; for if there be no Effusion of Blood, they must be closed as soon as possible; if there is, they are to be kept open, in order to force it out, so that 'tis indeed the Blood, which, in this Particular, ought to regulate the Conduct of the Chirurgeon.

When there is an Effusion of Blood, 'tis necessary to drain *Cure of the*
it; and to this purpose the Chirurgeon is to make use of the *Wound, in*
most gentle Means, before he proceeds to Extremities; of this *which there*
sort three are propos'd; The first is, the placing the Patient in *is an Effu-*
such a manner, that the Blood may run out of the Wound, *son of Blood*
which is done by obliging him to incline his Head downwards, raising up his Thighs, and laying him on the Wound it self; The second is to assist the Blood in its issuing out, by closing the Patient's Nose, ordering him to hold his Breath a little, and also shaking the Body a little; and the third is, to make use of the Instrument call'd *Pylcon*, or an *Extractor of Pus A*, which is a Syringe, whose Pipe is bent to accommodate it to the Shape of the Wound: This Pipe is then introduced, and convey'd as far as the Place where the Blood corrupts; then drawing out the handle of the Syringe, the Chirurgeon thereby fills it with this extravasated Humour, and thus sucks or pumps it several times.

If by these Means it be found impossible to empty the Breast of Blood, we must open it, in order by any Means to give issue to that Matter; and that is done two ways, either by dilating the Wound, or by making a Counter-Aperture.

The Wound is to be dilated, when the Orifice is in the lower *How the*
part of the Breast, either before or behind, for frequently the *Wound is*
Wound is at the same place where we make the *Empyema*; to be dila-
and though it should be some Fingers breadth higher, we must *ted.*
content our selves with dilating it; which is done by thrusting the hollow Probe B into the Wound, in order to guide in the Point of an Instrument, which must be either the strait Incision Knife C, or a crooked Pen-knife D; and we must observe, that we always make the Incisions downwards on the Teguments and exterior Muscles, to facilitate the issuing out of the Blood: For the Intercoastal Muscles cannot properly be
dilated

dilated at any other place, than that of the Wound which is betwixt the two Ribs. Next which, the Patient is to be placed in a Posture convenient for the Evacuation of the Blood, which cannot be done better than by laying him upon the Wound.

Observation of a Wound in the Breast.

One of the Duke of *Burgundy's Gendarmes* was wounded at *Beffort* in 1703, by one of his Comrades, who gave him a thrust with a Sword in the Breast directly under the right Pap; which Misfortune happening to the Patient about half a League from this City, the Breast had all that time to fill, before I was call'd to dress it. I contented my self with dilating the Wound sufficiently, to evacuate the Blood which choak'd it up, without dressing it the first Day: But obliged the Patient to lye upon it the whole Night, and the faster the Blood issued out, the freer he respired. The next Day I found the Breast perfectly emptied, when I dress'd it, and left him in the Hands of a Chirurgeon of that Town, who so well cur'd him, that a Month afterwards he came to us at the Army.

In what place the Counter-aperture to be made.

If the Wound be in the upper part of the Breast, and we are sure that there is an Effusion of Blood, we must of necessity make a Counter-Aperture, which is what we call the *Empyema*. It is made on the Declivity, or inclining part of the Breast, in two places, viz. in the fore, or hind-part.

When we chuse the fore-part of the Breast, the Operation is performed betwixt the second and third of the *Costa-vera*, or long Ribs, telling them upwards; this Method affords the Patient the advantage of being able to dress himself, when he is obliged to quit his Chirurgeon, either on account of not being able to pay him, or being forc'd to leave the place where he is; and sometimes the length of the Indisposition so tires out the Patient, that he resolves no longer to continue subject to the Chirurgeon's Hours. But the Inconvenience of the Patient's dressing himself, or lying on his Belly to drain out the Blood or *Pus*, makes us prefer the hind-part, because that being laid on his Back, the Matter easily repairs to the Orifice, and issues out without doing any Violence to the Lungs.

When the Chirurgeon is determined to make the Aperture behind, he strikes in his Incision Knife betwixt the third and fourth of the *Vera-costa*, or long Ribs, reckoning upwards, that is, one Rib higher than before, in order to avoid the *Diaphragma*, which does not mount so high before as behind. Without troubling my self to tell the Ribs, I commonly make the Incision four Fingers breadth below the Angle of the *O-moplata*, and the same breadth from the *Spina*, which is the place where the Ribs jet farthest outwards; but the *Empyema* ought, above all, to be made near the place of the Effusion of Blood, and the Chirurgeon must take care not to be mistaken on this Head.

The

The Operation then being resolved on, by reason of the absolute Necessity of preventing the Suffocation of the wounded Person, the Chirurgeon is not to spend any time in setting out his *Apparatus*, he will have time enough for that whilst the Blood runs out of the Breast, nor ought he to advise him to keep sitting, he is always so when he can respire. After having turn'd his Back towards the Light, and taken up his Shirt, he pinches the Teguments at the place which he designs to open, and causes them to be held with one hand by a Servant, at the same time raising them with his Left-hand, with his right he cuts them with the strait Incision Knife C; when having loosen'd the Teguments, he compleats the crossing the Muscles betwixt two Ribs, turning the Back of his Incision Knife towards the upper Rib, in order to avoid piercing the Vessels which are situate along the lower part of that Bone. The Muscles being cut, he opens the *Pleura* with the Point of the same Instrument, which he then draws out to thrust in his Finger, in order to know whether the Orifice is sufficient: After which, he causes the Patient to be laid on his Back, to facilitate the coming out of the Blood, which ordinarily runs forth abundantly, and he is not to be apprehensive of any danger in letting it all out; for when 'tis once without the Vessels, where-ever it stays, in only incommodes the Patient.

He then prepares a Linnen Tent E, which, according to *Qualifications of the Tent.* Authors, ought to have six Qualifications: First, That its Size be proportion'd to the largeness of the Wound; secondly, That it be soft, for fear of giving Pain; thirdly, That it be short and blunt at the Point E, for fear of hurting the Lungs; fourthly, That it be a little flatten'd to accommodate it to the Space betwixt the two Ribs; the fifth is, That it be provided with a Head G, that it don't slip into the Cavity, and a Thread H fasten'd to it, in order to draw it out if it should happen to sink into the Breast; and the sixth is, That it be moisten'd in some vulnerary Liquor. The Blood being run out, a Tent so *Dressing of the Wound.* qualified as this is thrust into the Wound; the Chirurgeon very well embrocates the Part all around the Wound, which he covers with the flat Pledgets I I, and a large Plaister, K, of *Gratia Dei*. Above that he lays a Square Bolster L, and then applies the circular Bandage around the Body with the Napkin M, folded in three or four Pleats, which is securely kept in its place, by fastening it to the scapulary Bandage N, before or behind.

'Tis trifling to be solicitous whether to preserve the Fibres of the internal Intercoastal Muscles, or those of the external ones, and to deliberate whether to cut according to the Rectitude of the Fibres of the one, rather than according to the Direction of those of the other: Both of them must be cut even and strait, and the Chirurgeon need only take care that the edge of his Incision Knife don't touch the Ribs, for fear

lest making an Incision on their *Periosteum*, he gives them an opportunity afterwards of discovering themselves.

Ill way of
opening the
Wound.

Some Authors have pretended to refine on this Practice, by advising us not to cut the *Pleura* with the Point of the Instrument; but after having cut the Muscles, and come to the *Pleura*, they will have us thrust it in with a blunt Probe, in order to make it crack; they tell us, that this way we don't run a risque of hurting the Lungs with the Point of the Incision Knife. But this Method deserves to be censur'd, for to avoid one Mischief which never happens to an able Chirurgeon, they draw on two, which may be attended with fatal Consequences; one is, that by the Impulsion which they use to open the *Pleura* this way, they separate it from the Ribs about the Wound; and the other is, that by breaking the Fibres of this Membrane, the Patient suffers an Effort which may cause a Fluxion and Inflammation.

'Tis customary in the Cure of Wounds, to take off the first dressing, or *Apparatus*, at the Expiration of twenty four hours; but Wounds of the Breast will not allow us so much time. When the Patient feels himself oppress'd, which sometimes happens six or eight hours after the Operation, he must be dress'd again, in order to give issue to the fresh extravasated Blood: Wherefore the Chirurgeon should have his *Apparatus* ready to dress the Patient as many times as Necessity requires: Above all, he must not spare bleeding him in the Arm, that by that sort of Revolution he may divert that Humour from issuing out at the Wound.

We are not to have regard for any Wound besides that made by the Operation; for the first being no longer considerable, must be left to close as soon as it shall be disposed there-to: But yet we reap one Advantage by it, which we make use of 'till 'tis cured; for being obliged to make Injections into the Breast, to cleanse and bring off the Pus and moist *Sanies* which fall thither, we syringe the Patient by the upper Wound, for the Liquors to run out at the lower, whither they naturally tend; so that these Injections, after having wash'd the Breast, run off without straining, or any Inconvenience.

Another
Observation
of a
Wound in
the Breast.

This is what is judg'd necessary with regard to the Operation to be us'd in certain Wounds of the Breast, and which ought not to be ventur'd on too rashly, as some would have had me done in the Case of Mr. *de la Bonoisiere*, one of the King's Querries, who was wounded at *Versailles* in 1701, in the right Pap with a Sword; which having entred the Cavity of the Breast obliquely, pierced the *Mediastinum*, run into the left Cavity: The supervening Symptoms of the third day seem'd to indicate, that there was extravasated Blood; those who saw the Patient with me, were of opinion, that I should perform the *Empyema*; I told them, that I look'd on the great Difficulty of Respiration to be an Effect of the Inflammation occasion'd

in the *Mediastinum*, by the Wound which pierc'd it: 'Tis true, the Patient could not continue lying; but I did not observe any Tension of the Breast, nor Weight on the *Diaphragma*: I perswaded the Father of the wounded Person to entreat Mr. *Felix* to come to see him, and to assist us with his Advice; he was of my Opinion, the Operation was not performed, and the Patient was perfectly well cured.

Monfieur *Messier*, Lieutenant of the Guards of the King's Relation of Port, was at Midnight wounded with a Sword in the lower a Cure at- part of the Breast on the right side; as soon as he came home, tempted by his Friends fetch'd a Sucker, who was Drummer in the Regi- Suction. ment of Guards; he suck'd the Wound, and assured him of a Cure in two Days. The next day the King at his Levée was told, that of two Persons who had been wounded the last Night, he who had caused himself to be suck'd was well, but he that was dress'd by the Chirurgeons was dead. This News run current for Truth: But in the Afternoon of the same day Mr. *Messier* confessed himself, and received the Sacraments, being suffocated: He sent for me, praying me to do to him what I thought proper. I told him, that I believ'd him cur'd on the Report which had been made to the King; but that by the Nature of his Wound, and the Symptoms which attended it, I found him very bad: Another perhaps would have let him perish in the Hands of his Sucker, but I believ'd it my Duty to help him in this pressing Necessity: The Wound being in the lower part of the Breast, I dilated it, and made an Orifice sufficient to give issue to the extravasated Blood: From that Moment he began to feel himself eas'd, I continued to dress, and perfectly cur'd him.

The Operation of the *Empyema* is also performed when there is Pus run into the Cavity of the Breast, which commonly happens after a Pleurisie, or a *Peripneumonia*.

The Pleurisie is an Inflammation of the *Pleura*, caused by Definition fervid and impetuous Blood which extravasates and clots in that of a Pless- Membrane: Some, from the Stimulations which the Patient rise. feels, will have it produced by an inflam'd Bile, which gathering betwixt the Ribs and the *Pleura*, is always accompanied with an acute Fever, a thick or frequent and difficult Respiration, and a sharp pricking and internal Pain: The *Greeks* call it *Pleuritis*, from the word *Pleuron*, which signifies the Side, because it violently afflicts the Patient on the side of the Breast.

The *Peripneumonia* is an Inflammation of the Lungs, excited Of a Pe- by the Settlement of a purulent Matter which succeeds the ripneumo- Fluxion of the Breast, and whose Signs are a frequent and weak nia. Respiration, accompanied with a Fever and Redness of the Face: The Word *Peripneumonia* is derived from *Peri*, about, and *Pneumon* the Lungs, by reason that this Distemper frequently forms it self in the Membrane which envelopes the Lungs.

These

These two Diseases are very violent, and dispatch their Patients in a short time, when the Humour which occasions a Pleurisie is contain'd within the *Pleura*, and that which causes the *Peripneumonia* in the Substance of the Lungs, or their Membranes; these two Diseases are under the Jurisdiction of the Physicians, and go beyond the Cognizance of the Chirurgeon, who is allow'd no more, than to know that they require frequent Bleeding, of which he cannot be ignorant, because he is the Executor of the Physicians Orders: But when this *morbific* Matter comes to an Abscess, and the *Pus* is run into the Breast, they are subjected to Chirurgery, because there is no other way of Evacuating them but the Chirurgeon's Hand.

What obliges us to proceed to an Empyema.

It depends on him to examine, before he attempts the Operation, whether 'tis certain that there is any Matter in the Breast, that he may not fall into the same fault which was committed by a Chirurgeon, and besides a very able Man, who perform'd the *Empyema* on the Duke of Mortemart, and found nothing in his Breast; he might reasonably alledge that the Operation was prescrib'd, and all the Relations desired it; but he was blam'd by all the World.

An Instance on this Head.

Something almost like this happen'd at *Versailles*, to one of the King's Chirurgeons, who coming from *Rouen* gave himself out for the most expert Chirurgeon in the Universe. Mr. *Helvetius* came to visit *Berteville*, the King's Upholsterer; the Patient having been long ill, and complain'd of a Pain in the right *Hypochondrium*; upon touching the Place, he thought there was Matter lodg'd there, and commanded the Chirurgeon to open him; which he did immediately, and found nothing to Evacuate; and the Patient dyed two Hours after the Operation. The Advantage which this poor sick Man reap'd, was that of being for ever freed from the Pain which he suffer'd, and from those which he might be threatned with for the future. An Apprentice might have been excus'd this Submission, by reason of his small share of Knowledge: But a Master Chirurgeon must be sure of himself, and not undertake an Operation of this Consequence on the Credit and Integrity of another.

Several have entertain'd an Opinion, that Nature alone may cure Diseases; they say, that there are three natural Ways of discharging Matter, by Spittle, Urine and Siege: But these are a sort of Miracles which we ought not always to hope for. I know that 'tis not impossible that by one of these three Means the extravas'd Humour yet remaining in the Lungs, or in the *Pleura*, may be evacuated; but as soon as the Abscess is broken, and the *Pus* diffus'd in the Cavity of the Breast, nothing but the *Empyema* can get it out,

Signs of an Abscess in the Pleura.

The Signs which indicate that an Abscess is forming in the *Pleura*, are, an Inflammation, a violent and piercing Pain which

which attacks the Patient all at once, a heaviness, a slow and continued Fever, accompanied with cold Fits, a hard Pulse, uneven and deep, a dry Cough attended with Thirst, and a pressing Difficulty of Breathing.

The Signs which inform us that the Abscess is in the Substance of the Lungs, are, that the Patient feels a fix'd and dull Pain, which comes only by little and little, he cannot respire without pain, the continu'd Fever and immoderate Thirst don't leave him; his Spittle is purulent his Eyes are sunk in, his Cheeks of a Vermilion red, and his whole Body becomes dry and *Atrophious*.

The Signs which advertise us that the Abscess, whether in *Signs of the Pleura*, or in the Lungs, is broken, and that the Matter is *Matter fallen on the Diaphragma*, are a diminution of all the Symptoms for some time, the pain is really not so sharp, inclining *Diaphragma* towards the superior or short Ribs, and the Patient finds some *ma*. Relief: But the supervening Symptoms are not less dangerous than the former; for besides the difficulty of Breathing, the Pulse rises, the Fever augments and becomes ardent, the Patient is afflicted with a great Inquietude, and a fluctuating Weight on the *Diaphragma*: He cannot bear lying, unless on the side affected; for if he lays himself on the opposite side, he feels a sharper pain, and a much heavier weight caused by the Matter which loads the *Mediastinum*: When he is to have recourse to Operation, as the sole way by which he can possibly be cured.

In order to prepare an Issue for this matter, there are two *Two ways* ways of opening the Breast, one by *Incision*, and the other by *of opening Caustics*, otherwise call'd a *potential Caustery*; for, as for the *the Breast*. *Trepan* or *Modiolus* on the side, and the *actual Cauterising* propos'd by some Authors, they are too cruel Methods to be used.

The Orifice made in the Breast by Incision, in order to draw out the *Pus*, is like that opened for the evacuation of the Blood, which I have just describ'd; wherefore 'tis not necessary to repeat it here, there being only some difference to be observ'd: Which is, that the Pleurisie being come to an Abscess, there sometimes arises a swelling betwixt two Ribs at the place where the Abscess is, in which Case the aperture is to be made on the Tumour, which seems to be produced by Nature to point out the place thro' which the *Pus* endeavours to make its way out.

The second way of performing the *Empyema* is by *Caustic*, or the *potential Caustery*. Having mark'd the place which is to be opened, we apply the *corrosive* or *caustic Stone* O, and above that, a small bit of Wood P, with a hollow round cavity to press it, and make it penetrate the better, it being affirm'd that this compression by a single Stone goes as far as three: When it has had its effect, the cavity is to be opened with

with an Incision-Knife. But tho' *Thevenin* lays down this Method as the most easie, and most in use, I have never seen it practis'd; and by reason the Caustic may, in burning the intercostal Muscles, proceed to and discover the Ribs; and the Scar coming to fall off, there remains a Wound too large to fix the Pipe, and to leave it in our power to retain the matter; these inconveniences consider'd, I always advise for the Incision.

Dimensions of the Pipe. In the *Empyema* perform'd on account of a Wound in the Breast, we make use of a Linten or Linnen Tent; but in that perform'd on occasion of the Rupture of an Abscess, we insert a Silver Pipe, the Orifice of which we stop with a small Stopple, in order to let out as much and as little of the *Pus* as we think proper: To which end the Incision must be made of a proportionate Size to that of the Pipe, which must take up the whole Aperture, and be provided with a Head R, to prevent its slipping into the Breast, and two little holes S S, thro' which to run the String T, which is to run round the Body, that the Pipe may not come out at any other time than when the Operator pleases; when the Ribs are too close, the Body of the Pipe must be flat, like that mark'd V, to adjust it to the spaces betwixt those Bones, and open for the space of its whole length as well as at the side of its internal extremity X, that the *Pus* may run off with the greater ease.

How the Patient is to be dressed.

Every time we dress the Patient, we pull out only the little Stopple which stops the aperture of the Pipe, and after having drawn it out, if the *Pus* don't come out, we must with a large blunt Probe push back the Lungs, which leaning against the end of the Pipe hinder the desir'd evacuation: The Injections made by the Syringe Z being enter'd thro' the cavity of the Pipe, we stop it for a moment, then taking out the Stopple, if the Patient incline his Body never so little that way, they issue out at the same Passage. These Injections are necessary to wash the Breast; and some Practitioners leave in the Cavity these mollifying and deterfive Liquors during the interval between one dressing and another, to prevent the Matter, by reason of its acrimony, making any Impression on the Parts: The Medicines to be injected must not be either Bitter or Sharp, lest they should excite a Cough: They must be barely Decoctions of vulnerary Plants, of Scabious and Coltsfoot Water, &c. to which may be added Wine in which is dissolv'd Honey of Roses, to cleanse and preserve from Putrefaction.

Good and ill Signs.

If the Matter which comes out is of an ill Smell and nasty Colour, and is evacuated in great quantity; if the Fever continues; if the Patient grows considerably leaner, and his Strength decays, these are all ill-boding Signs; but if the *Pus* is constantly the same, white, well-digested, of a good Smell, and in small quantity; if the Patient's Strength continues, and

he

he will submit to rules, he will be cur'd. We take out the Pipe when the Matter begins to be exhausted, which must be in forty Days, for after that the Wound will degenerate into a *Fistula*, and require Years to compleat its Cure.

I have already told you, that there are three Humours, *Blood, Pus*, and *Water* or *Lympha*, whose spilling or effusion oblige us to open the Breast to disengage them: I have treated of the two first, let's next examine what is to be done with regard to the third.

There sometimes gathers in the *Thorax* a serous Humour, *Of the* which distilling by slow degrees, fills one of its Cavities, and frequently two together; this is what we call the Dropsie in the Breast, which is caused as is that of other parts of the Body, either by the rupture of some *Lymphatic Vessel*, or by *Its Signs.* a deficiency of Fermentation, which renders the Humours too watry, or hinders the separation of the *Lympha* by the Urinary and other ways. This Disease is known by a dry Cough with which the Patient does not spit, by cold Fits, a slow Fever, shortness of Breath, the swelling of the Legs, and above all by a fluctuation and gurgling which is heard in the Breast, when the Patient moves himself, to make a noise like that of a Vessel half full when stirr'd. If the Patient can only lye on one Side, 'tis a sign that there is Water on that Side only on which he can bear lying; but if there be as much Pain in lying on one Side as the other, and that he chuses to lye on his Back, there is Water in the two Cavities of the Breast.

The evacuating of this Water must be attempted by *Hydragogues*, that is, by *Sudorifics, Aperitives* and *Diuretics*, all which tend to the evacuation of *Serosities*, and of which I have spoken in the Dropsie of the Belly; and when these Remedies, which expel them by Sweats, insensible Transpiration, and Urine, prove unsuccessful, we proceed to the Aperture of the Breast, which is performed in the manner I have just been shewing you. *Medicaments to be try'd before the Breast be opened.*

The Chirurgeon must not be surpris'd, if sometimes after having open'd the *Pleura* he does not see any Water nor *Pus* come out, tho' 'tis in the Breast: When the Lungs stick to the *Pleura*, at the place where the Operation is made, nothing can come out; but in this case the Chirurgeon must introduce his Finger into the Wound, and gently separate the Fibres which make this Adhætion, after which he will see come out what was contain'd in the Cavity. The sole fear of meeting with this Adhætion, which is yet very rare, hinders my proposing the Punction with the *Trocar* Δ , as the most easie and safe way in the Dropsie of the Breast; for with one single hole made betwixt two Ribs at the lower part of the *Thorax* we should draw out the contain'd Waters, give the Patient immediate ease, and avoid a large Wound, as is that of the *Empyema*, which must be long dress'd: The *Trocar* leaving behind it only a small Orifice which heals of it self; but with this *Inconveniences and advantages of the use of the Trocar.*

Instrument we should be in danger of piercing the Lungs, if they stick to the Ribs.

Of the
FISTULA
in the
BREAST.

Difficulty
of its Cure.

Fistula's in the Breast succeed Wounds in that part, and how careful soever the Chirurgeon may be in endeavouring to prevent those Wounds becoming *Fistulous*, frequently he cannot help it; the most able Practitioners have always look'd on them as a Rock on which several have split, by reason of the almost insurmountable Difficulties which occur in the cicatrising of those Wounds: But a Chirurgeon must never be discourag'd; he sometimes surmounts them at the very time when he durst not hope to succeed; he must make use of his utmost application to find out the obstacles to a Cure, and spare no Pains in the overcoming them.

After having enquir'd into the Reasons which render these *Fistula's* incurable, we find that it may be one of the five Causes which I am going to lay before you.

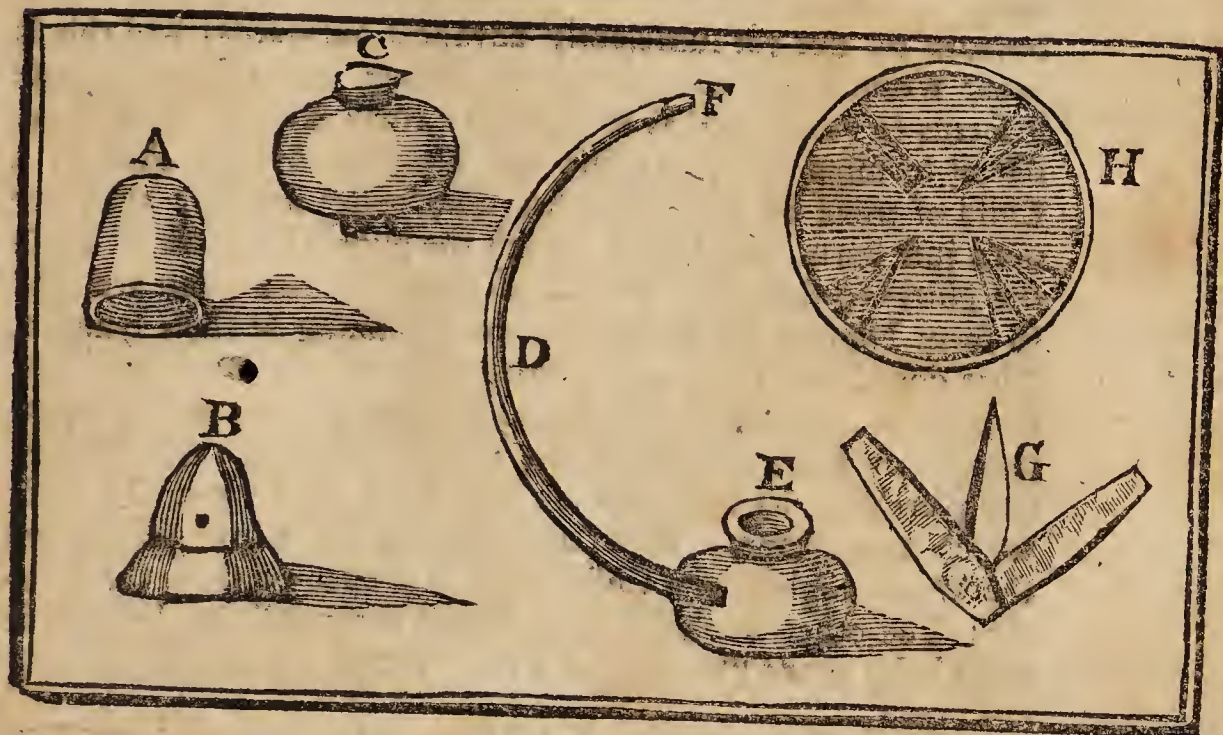
The first is the continual Motion of the *Thorax*; the second is the small disposition of the *Pleura* to re-unite by reason of its thinness; the third is the supervening Putrefaction of the uncover'd or perish'd Ribs; the fourth is the situation of the external Orifice of the *Fistula*, which is superior to its internal Orifice; the fifth is the Fæcundity of the source of Matter, when this Distemper succeeds a *Peripneumonia*; and the sixth, when the *Pus* proceeds from the Bones of the *Sternum*, or when it drains obliquely from one intercostal space to another.

It depends on the Capacity and Experience of the Chirurgeon to find out ways to relieve or cure those who have these *Fistula's* which are believ'd incurable, and which really are so in unskilful Hands. If 'tis the continual Motion of the Breast which opposes the re-union, the Patient must be put to Bed, restrain'd from crying out, groaning, or speaking, and from any violent Motion. If 'tis the *Pleura* which cannot close by reason of its thinness, he must by the assistance of the Flesh of the intercostal Muscles draw together the Lips of his Wound, and procure its cicatrising, having before consumed the Callosity if there was any. When the Ribs are uncover'd and perish'd, they are to be exfoliated with a small round Iron Instrument, which is called a Fire Button, which must be guided along a Pipe to the putrid part.

Practice
in divers
cases.

When the *Fistula* is oblique or *Tortile*, we are to lay open all its windings to the bottom. If after an Abscess of the Lungs the too plentiful Suppuration feeds the *Fistula*, the source must be exhausted; which is done by a good Regimen, general Remedies, and the Advice of a prudent Physician. If the *Sinus* comes from the Bones of the *Sternum*, or from some near or distant part, the Chirurgeon in this case is furnish'd with an opportunity of shewing his Industry in the Invention of Remedies and Instruments, by which the Obstacles to his Cures may be discover'd and remov'd.

FIGURE XXVII. Of the OPERATIONS perform'd on WOMENS NIPPLES.



THE Breasts, which make one of principal Ornaments of the fair Sex, and which are so necessary to the nouriture of Children, are not more exempt from Diseases, nor less subjected to the Chirurgeon's Hand, than other parts of the Body, but are frequently obliged to undergo very cruel Operations.

We distinguish the Diseases which happen to them, and the Operations which they require, into two parts; namely, those of the Nipples, and those of the *Mamma*, or Breasts.

The Nipple is that Eminence which jets out in the middle of the Breast, and in which terminate all the Lacteal Passages which pour the Milk into the Child's Mouth. When the Nipple is too small, the Child can scarce take it, and only plays with it; and when too big, its Mouth being too full with it, it cannot suck: But to chuse a middling and well proportion'd one, it must be about the bigness of a Haslenut, and somewhat longer, to the end that the Infant holding it betwixt its Palate and Tongue, may the easier receive the Milk, tho' it suck never so little. The small Channels thro' which this Liquor runs out cannot be too open, without letting the Milk out before the Child has occasion to suck it; nor too close or too small, without fatiguing the Infant by the Efforts which 'tis forc'd to make to express the Milk; they must be moderately dilated, that upon withdrawing the Child as soon as it has drawn the Nipple, we may see it stream out in several Spouts like a Garden-Watering-Pot: When the Milk comes

forth in this manner, the Child need only swallow, without being put to the Pains of Sucking, and these qualities join'd to several others make a good Nurse.

*Nipple not
form'd.*

In Women which have never given suck, the Nipple is sometimes not form'd without difficulty; the Child cannot take it, and when it has hold of it, it immediately lets it go, because 'tis not yet sufficiently advanc'd outwards; and this is what Women call not having the String yet broken, because it seems to be retain'd as it were by a small String. The manner of forming it is, to cause the Woman to be suck'd by a Child of three or four Months, who being stronger than her own just Born, will better Mouth the Nipple; or else to cause the Nurse to suck her, or one of those Women who are used to form Nipples for Women in the beginning of their lying in. That done, we put on the small Cap A, made of Box, and shap'd like a Thimble which the Women put on their Fingers when they sew, hollow in the middle to receive the Nipple, and pierc'd at its end, and on the sides, to let out the Milk which may escape. This Cap, which is taken off only when the Woman gives the Child suck, is proper to form the Nipple: The other mark'd B is yet more commodious, because it has a brim made like that of a Hat, which hinders its hurting the Breast.

*Effects of
the voracity of
Children.*

Some Children not finding Milk enough to satisfy them, suck the Nipple so violently, that it becomes chap'd and cleft at its basis, so much that it seems ready to separate from the Breast. This happen'd to several of the King's Nurses; those who had not Milk enough he bit their Nipples even 'till the Blood came, and as they could not resist him, they were oblig'd to be frequently chang'd: Those about his Majesty then happily presented Madam Ancelin, a Native of Montesson, who having a abundance of Milk, was the sole Woman who without being incommoded could suckle that Prince; she Nurs'd him six Months, and 'till 'twas proper to wean him; so that 'twas she which laid the Foundation of that vigorous Health which he has almost always enjoy'd, and which he does at present retain.

*Of the
Curdling
of the Milk
in the
Breasts.*

Frequently after lying in, the Milk running plentifully into the Breasts, curdles and hardens, which may proceed from the Woman's catching Cold, or her too soon uncovering her Breast, or from putting on some Dress which presses the part too much: In which cases Women cannot be too cautious to keep their Breasts well cover'd with quilted Linnen-cloaths, because the heat prevents the Milk coagulating, and opens the ways which it ought to take to come forth, to those who will not give suck.

*What to be
done in the
retention of
the Milk.* This Accident sometimes happens to Nurses, when there is some Obstruction in the Glands of the Breast, when they have continued too long without giving suck, or when the Cold has seiz'd

feiz'd them : They then say that they have the Hair, and this Indisposition throws them into a Fever for 24 Hours and more. When the Disease proceeds from Obstruction, we must make a *Liniment* of Oil of sweet Almonds on the Breast, and make use of gentle *Apodyne* and *emollient Cataplasms* ; if from the excessive quantity of Milk, it must be remedied by Bleeding and Diet ; and if from Cold, Heat must repair the Disorder which its contrary has occasion'd.

The Chirurgeon is obliged to endeavour to evacuate the curdled or clotted Milk which is in the Breast, without which its Continuance will not fail to cause an Abscess : There are two ways of getting it out, either insensibly, or sensibly.

Insensibly, that is, by *Resolution*, by the use of gentle emol- *How to e-*
lient and resolute Cataplasms : If the first don't succeed, we *vacuate*
make them stronger with the four sorts of Flower, and *Terra the Milk.*
Cimolia, or Cimolian Earth, decocted in *Hydromel*, or Mead,
adding a little Oil of Roses.

And *sensibly*, by forcing out the Milk through the Nipple. For the accomplishing of which, three different Methods are propos'd : One of which is the Application of the small Cupping-Glass C, whose Orifice is not to be larger than is necessary to admit the Nipple ; it is to be laid in boyling Water 'till 'tis hot, when 'tis to be taken out and applied to the Breast : The Nipple being comprehended within its Orifice, it sticks fast, and after covering it with a very hot Linnen Cloth, we leave it to fill it self with Milk ; after which we take it off, and again apply it as many times as we think proper. The other Expedient is, to cause the Woman to be suck'd by a healthful clean Woman ; who having fill'd her Mouth with Milk, spurs it out, in order to return to her sucking ; and thus continues 'till the Breast is drain'd. The third way is, for the *Use of the*
Woman to suck her self by the help of the Instrument D, cal- *Sucking-*
led a Sucking-pipe, and by the *Italians Lattecole*. If a Wo- *Pipe.*
man finds the small Cupping-Glass inconvenient, or that the sucking Woman puts her to too much Pain, she may suck her self with this Glass Instrument, the large end of which, E, is to be applied to, and cover the Nipple, the Woman keeping in her Mouth the end F, of the Neck of that Instrument : By this Means she will be put to less Pain, but must continue 'till her Breast is wholly exhausted.

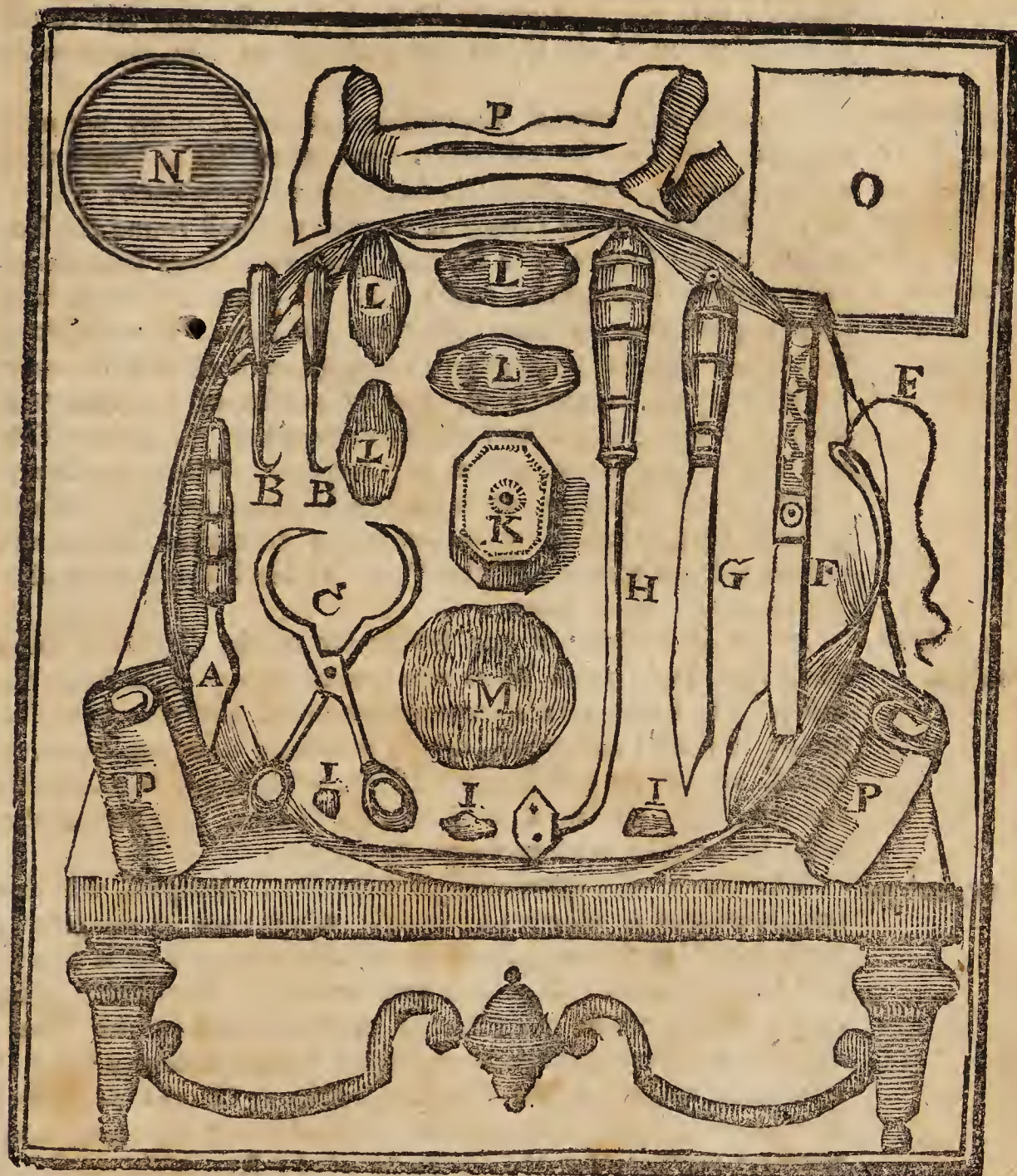
It, notwithstanding all these Expedients, the Milk continues *A Lacteal*
in the Breast, it will certainly grow to an Abscess, to the which *Abscess in*
'tis the more apt, by reason that a very little Alteration is suffi- *the Breast.*
cient to turn it to Pus. In this case we are to open the Breast with the Lancet G, as soon as we perceive any Fluctuation, in order to prevent the Pus occasioning any Disorder in this very sensible and tender Part.

'Tis one of the old Wives Errors, to believe that Steel Instruments are not to be us'd in Distempers in Women's Breasts,

and we find Women obstinately persist in their refusal to suffer them: When we are to leave them to be rul'd by their own Caprice, for which they often pay very dear; for that they suffer for a longer time, in Expectation that the Pus should eat through the Skin to make its way out, instead of one hole made with the Lancet, that sometimes breaks out into five or six, which miserably lacerate the Breast, and then they repent of their Obstinacy.

Dressing of the Wound. But when a Woman submits her self to her Chirurgion, he is to take a Lancet wrapt in a narrow bit of Linnen, which leaves the Blade no farther discovered than is necessary to make the Incision, which must be but twice as long as that in bleeding, in order to evacuate the Matter only. We use no Tent in these sorts of Abscesses; no more is necessary than a Plaister H, cut in the Shape of a *Maltese-cross*, which is taken off as there is fresh Matter to come out: For my part, after the Orifice is made, I always use such a Plaister, which I compose of the *Unguentum Sacrum*, or *divine Ointment*, spread on a piece of Leather, with which I cover the whole Breast, and have found it to succeed very well. The Patient dresses her self, taking off the Plaister three or four times a day to dry it, and warming it again when she puts it on: Three or four Plaisters renew'd from time to time mollifie the hardness, and proceed on to a perfect Cure

FIGURE XXVIII. *The APPARATUS for the Operation practised on the CANCER.*



A Cancer is universally agreed to be the most terrible of all *Of the* Evils which attack Mankind; though Wars and CANCER. Plagues kill in less time, they don't yet, to me, seem so cruel as the Cancer, which as certainly, though more slowly, carries those afflicted with it to the Grave, withal causing such Pains as make them every day wish for Death.

'Tis a Disease which attacks not only the Breast, but several *Reason of* other Parts, on which it is not less outrageous: It sometimes *its different* assumes Names.

assumes different Names; when it comes on the Legs, 'tis called the *Wolf*, because if left to it self, 'twill not quit them 'till it has devour'd them; when it fixes on the Face, 'tis called a *Noli me tangere*, because that touching irritates it, and it makes a greater Ravage: Authors also observe, that there are besides Tumours and cancerous Ulcers in several parts of the Body, which I shall not mention to Day, but confine my self to the Demonstration of the Operation practised on the Cancer on the Breast.

Examina-
tion of the
Cancer.

To come at a perfect Knowledge of the Cancer, we must examine it at two several times, *viz.* when 'tis no more than an *Imposthume*, and when 'tis degenerated to an *Ulcer*.

In its be-
ginning and
Progress.

The *imposthumated Cancer* is originally a small round flat Tumour, of the Figure of a Lentile, and sometimes long continues without increasing: At its rise, 'tis often free from Pain, then augmenting by slow degrees, 'tis attended with Pain, which encreases in proportion to the growth of the Tumour, 'till it becomes insupportable, not by reason of its great Violence, but being stupid and tiresome, it afflicts the Patient Day and Night, not allowing him any Repose. When the *Cancer* is grown big, the Tumour is hard, *schirrhous*, rough, livid and painful, very adhesive by reason of its numerous Roots, and remarkable on account of the Veins of black Blood dispersed over its whole Superficies.

In its Ulce-
ration.

In the first Days of the Ulceration of the Cancer it looks like a raw flay'd place, from whence there exhales a sharp Serosity, which afterwards becomes corrosive, and eating the Tumour, it makes an Orifice, which is defined to be an apparent, round, loathsome and stinking Ulcer, with large, hard, knotty and revers'd Lips, of a livid or dark Colour, and surrounded with Veins fill'd with melancholly Blood.

Etymology.

The Name of *Cancer* was given to this Distemper, whether *imposthumated* or *ulcerated*, because when even in the former State, the Vessels being swell'd, what we discern of it resembles Crab's Claws; to which may be added, that in that Condition the Tumour is so rooted in the Glands of the Breast, that 'tis no more possible to extirpate it, than force a Crab to quit what he has grasp'd betwixt his griping Claws: And when it is ulcerated, this Disease lacerates the Part, proceeding from without inwards by the Progress of its Roots, in which it seems to go backwards as Crabs usually do.

The Causes of Cancers, according to some, are both external and internal: The first refer themselves to a violent Contusion, or rather Compression, as it most commonly happens to the Glands of Womens Breasts; which makes room for the *Lympha* to stay there, to thicken, and acquire an Acrimony by its continuance. The principal of the internal Causes, is in the vitiated Temperament of the Liquors separated from a Terrestrial and Viscous Blood, wholly filled with coagulating

Acids.

Acids, which forming Obstructions in the Glands detain the *Lympha* there, and dispose it to such a degree of Acrimony, as to putrifie the glandulous Substance which contains it.

Of twenty Women afflicted with Cancers, fifteen will be found to be aged from forty five to fifty Years, when Nature usually puts a stop to the menstrual Evacuations. This Disease is very rife in Nunneries. Monsieur *Du-Chêne* and I, in the Journey which we took with the Princes in 1700, found it so in almost all the Towns through which we pass'd. The Patients all of them were near fifty, or if younger, they had not had their Terms regularly; for there is such an exact Communication betwixt the Breasts and the Matrix, that as soon as the Courses are ready to come, or that they are retard-ed some Days, the Breasts never fail to harden, and to be in Pain.

A Cancer on the Breast is known by the Tumour of the Part, which seems rough and unequal, by reason of the swelling of the Glands, which are grown hard and choak'd with Humours; it is frequently adherent to the *Thorax*, the Veins of the *Mamma* are visible, and full of adust Blood; and when there is a lividness on the Point of the Tumour, 'tis a sign that 'twill soon ulcerate. When 'tis open the Pain is incomparably augmented, because the Serosity which comes out is as biting and corrosive as *Aqua-fortis*, and continually eating these Parts, does not allow the Patient any Relaxation.

Some believe, that the ulcerated Cancer is nothing else but a prodigious Multitude of small Worms, which by little and little devour all the Flesh of the Part: What made room for this Opinion, is, that with the *Microscope* we have sometimes discerned some of those Insects in Cancers; and that putting a bit of Veal on the Ulcer, the Patient has felt less Pain; because, say they, these Worms then feeding on the Veal, leave the Patient at Rest for some time. This Opinion has its Favourers and Censurers, but I shall not at present endeavour to reconcile them.

The Prognostic must necessarily be very melancholly, since there is no Disease more afflicting, and which ought to strike the Patient with more Apprehension, than an ulcerated Cancer; nor is there any which fatigues the Chirurgeon more, nor gives him more Trouble, because the Disease is almost always incurable. If we believe *Hippocrates*, Cancers are not to be touch'd, for in touching them, observes that Author, you aggravate the Evil, and hasten the Death of the Patient. And indeed, in endeavouring the Cure of a Cancer, we may disturb the *Lympha*, and other Juices which distribute themselves into the Part, and put them into a Fermentation which may sour them; and which opening the Salts, may cause strange Ravages to follow it.

But

But how are you to resist the Persecutions of a poor suffering Patient, which implores your help? Are you to abandon her to the Rigour of her Distemper, which torments her Day and Night? No, a Chirurgeon must not be so cruel: He must search out Means to cure her: And if that is not in his Power, he must at least endeavour to soften the Disease, and render it more supportable.

Palliative
Remedies.

When I advise the use of palliative Remedies in this Case, I mean, with regard to ulcerated Cancers, whose Edges are perished, and where there is a remarkable Loss of Substance: To those Patients we ought to use mollifying Remedies, which assuage or diminish the Pain, as the Juices of *Arnoglossum* and *Solanum*, or *Night-shade*, Pledgets moisten'd in a vulnerary Decoction for to defend the Sore. Some put nothing into the Ulcer but a small piece of Fillet of Veal; for whether there be Worms or corroding Serosities, their greatest Force will be exercised on the Veal, and not on the Flesh: With such gentle Remedies the Patient is to be amused, since in these Cases nothing but Death is to be expected.

Three Mo-
dern Au-
thors on
this Disease

Before I shew you the Operation, I must acquaint you, that within these last five or six Years, three Physicians have written on the Cancer. One is Monsieur *Gendron*, Doctor of Physick, of the Faculty at *Montpellier*, Nephew to the Abbot *Gendron*, who dressed the Queen, Mother of the King, who had a Cancer in her Breast. The second is Monsieur *Alliot*, Counsellor and Physician to the King, and the *Bastille*, Son of Monsieur *Alliot*, Physician at *Barle Duc*, who was sent for, and came to Court in 1666, to dress the same Queen of that Distemper. And the third is Doctor *Helvetius*, who is very well known at *Paris*, under the Name of the *Dutch Physician*.

These Authors have form'd particular Idea's of the Nature of the Cancer, and have each of them set up a different System; upon which we are to embrace that which seems most probable: They are then, in few words, as follows.

System of
the first.

Monsieur *Gendron* says, that the Cancer is a Transformation of the nervous Glandulous Parts and the Lymphatick Vessels into one uniform Substance, which is hard, compact, indissoluble, capable of Augmentation and Ulceration; and he farther adds, that he acknowledges no other cause of this Transformation, than the Cessation of the Filtrations of the Part, which by the loss of its Spring, and infeebling of its Tubes, becomes one Substance, capable of increasing by a mechanical Disposition of the contiguous Parts, which render it irreducible to its first Estate: And he maintains that the Ulceration depends only on the Incidents attach'd to the extreme augmentation of the transform'd Body, which by an actual pressure, or by the alterations in the Blood which occasion the Lividness, causes the Rupture of the Skin, which is to the Cancer what the *Pe-*
riosteum.

riosteum is to the Bones, and afterwards exposes the cancrus Mass to the impressions of the Air in the circumstances of its Structure, jetting farther out; that is, in a state of augmentation by its Roots, which have a sort of Vegetation, enabling them to spread into their Neighbourhood, and a conformation of Pores to corrupt the Humours by which they are imbib'd.

Monsieur *Alliot* says, that the Cancer is a very hard, sometimes stony, rough and livid Tumour, always accompanied with Pains more or less violent, according as the Circumstances which meet in it are more or less uneasy. He adds, that the Cancer, generally taken, is a *Scirrous* Tumour, since it is very hard, but painful, with this difference, that the *Scirrhus* is indolent. He looks on the redness, the roughness, the lividness, and the interspers'd Veins, as equivocal and accidental Signs, and considers the Pain as the specifick and individual Character of a Cancer. He affirms, that the melancholy Humour which forms the *Scirrhus*, is charg'd with an acid much less open'd than in the Cancer, in which it does not come to the degree of Corrosion 'till its sharp cutting Points have surmounted and destroy'd, if we may so say, the volatile, smegmatick and balsamick Salt of the Blood, and then pricking and lacerating the nervous and membranous Parts by their irregular Motion, they excite at last horrible Pains which are felt in the Cancer.

Monsieur *Helvetius* believes that the Source and Origine of the Cancer is nothing else but a small Coagulation of some drop of Humour in a Gland; that this Coagulation proceeds commonly from an exterior Accident, as a Blow, a Fall, some Pressure or Strain; that in proportion to the quantity of Humour which gathers in the Gland, the Cancer increases; that in its growing the Pain augments, because the nervous Fibres press'd by the Tumour, make impulsive Efforts more or less painful, according as the pressure is more or less violent; that the Disease is encreased by the Application of Remedies to it, because they enflame it, and by that means rouse and sharpen the Humour, which remains as it were dos'd all the time that it is not irritated by any thing which may set it in motion; that the Remedies, whether dissolvent or absorbing, which cause an Effervescence, also causes that the Leaven taking up more room than before, produces terrible Pains, and that not being possible to be contain'd any longer in the Gland into which it was thrown, it bursts it, and forms an Ulcer, which is called an open Cancer, whose ferment afterwards diffuses it self into the neighbouring Parts.

These Authors don't only disagree on the Nature of the Cancer, but also on the manner of treating it. They propose to us three different Methods: Monsieur *Gendron* requires only the Palliative in the Cancer, and forbids Eradicative in the Cure. Monsieur *Stemper*.

Of the several
cond.

The Source
of the Cancer
according to the
third.

Their several
Methods of
handling
this Disease.

Monsieur *Alliot* will have us consume the cancerous Tumour with his absorbing Caustic: And Monsieur *Helvetius* orders the Extirpation of it by Operation; and let's now see on what they found their Opinions.

According to Monsieur Gendron. Monsieur *Gendron* proposes the attempting of no more than the Palliative Cure in all manner of Cancers, whether before or after Ulceration. He calls those occult Cancers, whose cancerous Humour is adherent: He proves the Impossibility of Cure, by the deep Roots which they have spread into the internal Parts, and affirms that nothing is then to be done, but to offer the Patient the help of palliative Remedies, which in this case are such as retard, as much as possible, the successive Disorders attach'd to the Progress of these Cancers, having, to that end, regard to the situation of the Evil, its Cause, Age, Sex and Temperament of the Patient, in which he advertises us, that, in order to succeed, 'tis of importance to rid our selves of the prejudice of the Existence of a corrosive Acid compar'd to *Aqua-fortis* and *Arsenic*, lest being perswaded that all the Secret of the palliative Cure barely consists in the use of some absorbing Medicaments, Specifics against this supposed Acid, far from stopping the Progress of these Evils, should prove the Causes of their Irritation. Lastly, he does not at all ascribe the incurableness of occult, as well as ulcerated Cancers, to the untractable Character of an acid Humour, but only to the Circumstances attach'd to the Structure, and to the augmentation of the cancerous Substance: If these Ulcers are incicatrifiable, 'tis because the Fibres of the Skin are not able to connect and unite with those of the new transform'd Mass.

According to Monsieur Alliot. Monsieur *Alliot* asserts, that the cure of the Cancer consists in the Mortification of the Acids, by *Alcali's* and *Absorbents*; that the business in hand is to mortify the sharp and cancerous Ferment engag'd in the part affected, by consuming the infected Flesh and Glands; that to tame this Monster we are to absorb a very exalted and very corrosive Acid, by an Absorbent, proportion'd of the said Acid which is to be destroy'd, and that of this kind is the Effect produced by the *gentle Caustic* which was invented by his Father, and propos'd in a Thesis printed at *Paris* in 1665, and which he has rectified to publish it, as we see at the end of this Author's Book, which maintains that his Absorbent alone by slow degrees consumes the Flesh imbib'd by the *Carcinomatous Virus*; that by its use we see from day to day what Progress we make in following the Tract of this acid Corrupter, by mortifying and absorbing it as far as it can have penetrated, without the fear of any ill Symptoms. He assures us, that the Operation of his Caustic is neither too sluggish nor too violent, that it does not dissolve like ordinary Caustics, and that it attacks nothing besides its acid Adversary, which being at last destroy'd and annihilated, dissipates all the hardness, and causes the Pain to cease, the laudable Suppuration

tion intervening, which drives away the last Scars, after which he clears and incarnates it, and procures a good and solid Cicatrizing.

Monfieur *Helvetius* takes a view of the Cancer in three different Estates; he says, first, that in the beginning 'tis a very inconsiderable Disease, and easie to Cure, either by dissolving the small Portion of Humour then but imperfectly coagulated, or consuming it by some gentle Caustic. Secondly, that when the Humour is entirely harden'd, and the Tumour enlarg'd by the conjunction of fresh Humour, which incessantly comes to coagulate with the first, great care must be taken not to apply any Remedy, for fear of irritating the Humour, setting it in motion, and dispersing the Leaven; but that in this case we are to open the Skin at the place where the Tumour is, and extirpate the Gland which forms it, which is at once to bring away the Evil and the Cause of it. Thirdly, That when the Cancer is come to such a state as to be open, that the Ferment is diffused, and that the Patient feels her self drawn by little Cords, the Operator must immediately apply to the Amputation of the whole cancrous Part, and of the intire Breast, because then he may at once take away all the Ferment, and all that has imbib'd it.

According to Dr. Helvetius.

I have here given you, in short, an Exposition of these three Sentiments, in order to give you an Idea of the Nature of Cancers, and to point out to you several Methods of handling them. You have heard three able Physicians speak; let us see what Chirurgery orders to do; for 'tis not by Words, but by Effects that we conquer and destroy this Evil.

Chirurgery commands the Operation to prevent Death, which would be infallible without its assistance, when the Cancer is confirm'd, because we cannot often destroy it at its Birth: We must then with the Knife take off this Mass of Flesh, and the sooner 'tis done, always the better, after having determined whether we are to proceed to Extirpation or Amputation; for these are two Operations different from each other.

Extirpation is practis'd when the Cancer is not open, and the Tumour no bigger than a Wallnut, or, at biggest, a small Egg. The Chirurgeon makes a cross Incision on the Skin of this rising, he separates from the Glands, with the Penknife A, the four bits of Skin which make the four Angles of the Wound, then with some Instrument he holds fast the Gland to dissect it from all its Circumstantials, and lifts it out quite intire: The Chirurgeons formerly made use of one or two Instruments mark'd B B, to hold the Gland, as in Enchisteous Tumours: But Mr. *Helvetius* has invented a pair of Forceps C, which are very commodious, and to which he gave the Name of *Helvetian Forceps*.

How to extirpate the Cancer.

This is an Operation which has made noise enough at *Paris*; 'tis agreed, that it may succeed, provided the Patient be young and of a sound Constitution; and 'tis also advised to be undertaken, when the Cancer has not taken up the whole Breast, when the Tumour is not adherent to the neighbouring Parts, and when 'tis moveable throughout: But, in order to sing *Victoria*, the Chirurgeon must not take a Gland charg'd with Matter for a characteris'd Cancer, as sometimes those do, who boast of having cured thousands. A Woman to whom I apply'd a Plaister compos'd of *Mucilages*, and *Vigo's* Plaister dissolv'd in Linseed Oil, on a small Tumour on her Breast, which this Remedy dissipated, some Years after told Mr. *Dodart* (the Father) that I had cured her of a Cancer. He came to me to ask with what Remedies I had perform'd that Cure; I did not take the Honour of a Cure which I had not perform'd, but own'd that it was not a Cancer, but only a tumefied Gland which was dissolved in a Month's time.

Relation to
this purpose.

'Tis now seven or eight Years since the *Marchioness* of *Blanc* had one of the same Nature, of which she was cur'd; and the *Marchioness* of *Dangeau* also had one three Years ago, which was dissolved by the Application of Remedies; and if these Glands had been extirpated, the Publick would infallibly have represented them to have been Cancers.

Necessity of
Amputa-
tion.

Amputation is perform'd when the Cancer occupies the whole Breast, or when 'tis ulcerated, and its Lips appear to the Eye dismal, hard and corrupted; by reason there is no other way of delivering the Person from this terrible Disease, than intirely cutting off the Breast; which the Chirurgeon performs, duly observing what is to be done before, during, and after the Operation.

Preparati-
on of the
Patient.

Before the Operation, pursuant to the Advice of an able Physician, the Patient must be prepar'd by Bleedings, Purgations, Opiates, and other proper Remedies. If the Patient has her Terms regularly, we must wait 'till they are pass'd; and the Day being fix'd, we dispose the *Apparatus*, which consists of a Needle threaded with a small String, a Razor, or a good Knife, stip-tic Waters, astringent Powders, small caustic Buttons of *Vitriol* in case of need, a great many Pledgets, a Plaister, Bolsters, a Napkin, and a scapulary Bandage.

The Appa-
ratus.

In the Operation, the Patient is to be situated in a convenient Posture, both for her and the Chirurgeon, that is, half lying on her Back; the Arm on the side on which the Tumour is must be rais'd, and turn'd behind her, that the said Tumour may shew it self the better, and the pectoral Muscle be a little withdrawn from below the Tumour. The Chirurgeon then with Ink traces out the whole Circumference, which is the Place where the Incision is to be made; then running the crooked Needle D, across the Body of the Tumour; it is threaded with the String E, whose two Ends are tied, and with
which

which he makes a Noose which serves to sustain the Tumour, and in drawing it to separate it from the Ribs. 'Twould be to no purpose to pass the Needle twice through, we may spare the Patient that Pain, for a single Noose will sustain it as well as a double; then with a Razor F, or a large flat Knife G, *How to perform the* which I find more commodious than the Razor, which may *form the* fold during the Operation, the Chirurgeon cuts at the mark'd *Operation.* Place, and takes off the whole Body of the Breast in a short time: This Operation is easier than is imagined before 'tis performed; for the Breast separates as easily from the Ribs, as when we divide the Shoulder from a quarter of Lamb.

After the Operation, the Blood must be allowed to flow for *What remains after the Operation.* some time; and the Chirurgeon also, with his Hand, presses the Part around the Wound to make it discharge the Veins of the blackish Blood which they have received from the Tumour.

We have given over the use of the Searing Irons, called Fire-Buttons, and that of the red-hot flat Iron H, which was formerly appropinquated to the Wound, to dry and consume the rest of that voracious Acid, which was believed to have remain'd; these hot Irons make the Patient tremble, and are not really of any use, since the abovesaid Remainder never fails to drain off, with the Humour which is pressed out of the Wound. If the Blood flows out in too great abundance, the Chirurgeon applies the small Vitriol Buttons, III, to the Orifices from whence it springs, and makes use of the astringent Powders in the Box K; but if there happen no *Hæmorrhage, Of the dressing,* he only covers the Wound with the dry Pledgets L L L L, and above them the great one M, made of Tow, and cover'd with astringent Powders, incorporated with the White of an Egg: We use a Plaister of *Diacalcites* N, then the Bolster O, and the Napkin P P, with which we make a circulary Bandage about the Body, and which we fasten to the scapulary Bandage Q. Mr. *Helvetius* orders the laying on the *Thorax* a Napkin several times double, and moisten'd in Beer and fresh Butter beaten together. This is a Practice usual in *Holland*, and as he informs us, prevents Inflammation.

'Tis not sufficient to have perform'd the Amputation of the Cancer, but the Chirurgeon must, by a judicious Conduct, endeavour to cure the Wound, which is not always in his Power. The Cancer being taken off, he uses the same Remedies as though it yet subsisted: That is, to observe a strict Regimen of living, solicitously to avoid all Acids and terrestrial Ailments, and any such in which we suspect are any fix'd corrosive Salts, because they coagulate the Blood; on the contrary, the Nutriment must abound with volatile alculous Salts, because they dissolve the Blood, and prevent its Stoppage in the Parts. The Patient must breath a subtil Air, in order to render the *Lympha* more fluid and agile, the Belly must be kept open; and if any Evacuation is stopped, all possible Endeavours

are

are to be made to provoke it. All manner of Anger, Uneasiness or Melancholly, must be banished, by reason those Passions coagulate the Liquors; on the contrary, Joy and Tranquility of Mind contribute to a gentle Fermentation of the Blood, and an equal Distribution of the animal Spirits through all the Parts of the Body. In short, such Medicaments must be made use of to mollifie the Acrimony of the *Serosities*, as *Diaphoretics* and *Alkali's*, as well fix'd as volatile, of which you will find several in *Verdus's Pathologia*, to which I refer you.

What sort
of Un-
guents.

The Chirurgeon is to dress the Wound with Unguents, which absorb this malignant Serosity, in which the adjacent Parts are soak'd: If there remain yet any of those small Sprouts which convey the Cancer to the intercostal Spaces, he must, by his Caustics, destroy them by slow degrees; and in this Case Monsieur *Alliot's* Remedy is of excellent use. We may also make use of the Unguent prescribed by Mr. *Helvetius*, in his Letter concerning the Cancer; but above all, those Remedies are to be avoided which occasion too much Pain. When the Wound is well cleansed, and the Flesh of a beautiful Vermillion Colour, the Chirurgeon must procure its cicatrizing, which always takes up a very long time, as well by reason of the very round Figure of the Wound, as the quality of the Humour which caused the Distemper, and which commonly obstinately baffles all Remedies. When the Wound is cicatrised, the Patient must not discontinue the use of internal Remedies for some Years, lest a fresh Tumour should break out on some other Part, and produce a new Cancer.

Relation
of an Am-
putation.

I shall conclude this Article with the Relation of one which was cut off at *Marseilles* about four Years since. Passing thro' that City with the Princes, Monsieur *Du-Chêne* and I were desired, by Monsieur *le Bailly de Noailles*, to see Madam *de Montreuil*, who had been long afflicted with a Tumour in her right Breast. Two of the most celebrated Physicians, and two Chirurgeons met us at the Hour appointed by Monsieur *Du-Chêne*, and endeavoured, by a long Discourse, to prove, that the first Cause of this Tumour proceeded from that Lady's suckling one of her Children about ten Years past: The other thought he hit the Mark better, in pretending that her Husband having had a Venereal Distemper, might have communicated it to his Lady, and that this was the true Cause of the Disease in question. When it came to my turn to speak, I told them, that they talked like able Physicians, who dwelt no small time on the Causes of Diseases, and sometimes assigned very remote ones: That for my part I talk'd like a Chirurgeon, and concluded that 'twas a perfect Cancer; that without branching my self out into long Arguments to prove it, they need only look upon it, and that I knew no other Remedy in the present Case, than Amputation: Mr. *Du-Chêne*, who was of my Opinion, advised the Patient to resolve to undergo that Operation, there being no other way left of saving her Life.

On the next Day, Madam de Montreuil having desired me to Visit her, I confirm'd what we had said the Day before, representing to her, that she had no other choice, but either that Operation or Death. I told her, that the Operation seem'd more frightful before, than it was painful or insupportable afterwards; upon which, she, like all other Patients, preferring Life to the Loss of a Member, determin'd to undergo it. She would have desir'd me to have perform'd the Operation; but that she had then her Terms, and having no more than two Days to stay at *Marseilles*, I could not satisfy her. There was no Chirurgeon at *Marseilles* which had ever perform'd the Operation, and the Lady could not remove to any other Place, the Coach incommoded her too much, by reason that the Cancerous Mass was very weighty, and the least shaking, even that of a Sedan, caus'd very violent Pains. She at last chose Mr. Geofroy, Chirurgeon-Major of the *Marine*, with whom I conferr'd on the Operation. I advis'd him to perform it, seating the Patient in an Elbow-Chair, (with an Iron to let the back downwards) leaning on her Back, that he might leave her as it were lying after the Amputation; not to run either the Needle, or the String, thro' the Tumour, but spare her that Pain; to sustain the Mass with his Left Hand, whilst he made the Incision with his Right, telling him, that thus he would take off both the Cancer, and the Breast, without putting the Patient to an extreme Pain. This was accordingly perform'd fifteen Days after our departure, as we order'd it; We receiv'd the News of the Success, and afterwards of the perfect Cure of the Patient.

Observation to be made.

Gibbosity is a Crookedness of the *Spina Dorſi*, or Back-Bone, which requires the dexterity of a Chirurgeon to correct it. The Secret in this Case consists in preserving to a Man all the parts of this bony Pillar, the just proportion which the Creator has bestow'd on it, and in restoring it, when fallen from its Perfection. In this Machine there are often faults which proceed from Nature, and which 'tis impossible to repair.

Of Gibbosity.

The *Spina Dorſi* is compos'd of thirty Bones, which are call'd *Vertebrae*; they are placed one above another, and fasten'd together by Ligaments, which leave them the liberty to move from one side to the other. The Head is situate on the point of this Pillar, the Ribs and the Arms are join'd to its sides, and the Thighs to its lower part. 'Tis, as it were, the Basis which bears and sustains the whole Edifice of the Body; 'tis that which by its straightness makes a good Shape, and when bent in what manner soever, renders the Man Deform'd and Lame.

Description of the Spina Dorſi.

'Tis observ'd, that the Spine bends and jets out five principal ways. 1. *Inwards*, and then it leaves a hollow place in the middle of the Back. 2. *Outwards*, when it forms a Bunch which is call'd *Gibbus*; or, 3. *towards the Right*, when the Right

The Spine distorts five ways.

Shoulder is higher than the Left; or, 4. *to the Left*, which raises the Shoulder on that side higher than the other. 5. Or lastly, *Obliquely*, and like the Letter S, when one part of it jets outwards, and another inwards. Of all these distortions that which most seldom happen is the Curvature inwards, because the Structure of the *Vertebra*, and the impulse of the internal parts are generally from within outwards against the Spine.

External

and Inter-
nal Causes.

Impossible

A Person may become *Gibbous* from an *external*, or by an *internal Cause*: By an external Cause, as a Blow, or a Fall, not remedied at first, by Straining in carrying heavy Burthens, by Custom as the Labourers in the Vineyard, who are always stooping to till the Vines, or Plow the Ground, or by an ill Custom of making too low complemental Bows. The internal Causes are a too violent Heat, which drying up some of the Ligaments of the *Vertebra*, hinders their stretching themselves out sufficiently to give the *Spina Dorsæ* its due extent; or an excess of Humidity, which soaking the same Ligaments in a viscous Juice, relaxes them, and suffers them to prolong themselves beyond their bounds; but I believe Weakness has a large, or indeed a larger share in it than all these Causes, of which we have a famous instance in a + Person of Quality.

+ The

Duke of

Burgundy.

An In-

stance.

This Person was very streight, and well shap'd, to the Age of eight or nine Years: 'Twas then observ'd, that he endeavour'd to lean on things, and that he inclined to one Side, and sustain'd himself on the Arm of his Elbow Chair: His *Spina Dorsæ* was examin'd, and was found to bend towards the Right, assuming the Figure of a Crescent: We knew, that being of a very tender Constitution, it was the weakness of the Spine and its Ligaments, which being unable to bear the weight of the parts of the Body from the Girdle upwards, bent under it. Little Bodice of Whalebone were made for him, to strengthen his Spine; as was also a commodious Elbow-Chair, to rest that part in its whole length: To this Chair were added Strings, which passing under his Arm-pits supported the whole weight of his Body, and eas'd the *Vertebra* of the weight of the upper parts. But what precaution soever was taken, and what Inventions soever were put in Practice for several Years, it has not been possible to prevent the spoiling of his Shape: Yet the Heart and Lungs are not press'd, the Vital Functions are not incommoded; and Nature, weak in this regard, has recompens'd this Defect, by a thousand excellent Endowments of Mind, an exalted Genius, and a Courage and Wisdom not to be found in others at his Age.

This Im-
perfection
not heredi-
tary.

Gibbosity is not always a Hereditary Defect which passes from Father to Child: We see Fathers and Mothers with this Imperfection have streight Children, and well shap'd Fathers and Mothers have *Gibbous* Children; 'tis a misfortune attach'd to each Subject in particular, and a deficiency, the Cause of which ought never to be sought after, but in him that is afflicted with it.

The

The Chirurgeon must not pretend to render a Child disposed to be crooked, perfectly strait, he can do no more by all his Care, nor all his good Conduct, than hinder this Vice from encreasing to such a degree of Deformity, as he would have fallen to without his Assistance: Wherefore he should not promise the Parents any more than he is able to perform, as is practised by *Tailors* and *Steel Bodice-Makers*, who, to get Money, assure them to make them as well shap'd, as if they had never been deformed.

'Tis impossible to prescribe positively, and in particular, what ought to be done to *Gibbosity*: If the Spine jets outwards, lay the Child on a Mattras somewhat hard, keeping it on its Back, and without Pillow, that the Head and the Spine may be on the same Level: If it jets out from the right leftwards, by the help of little Bodice made on purpose, gently compress the Part which comes out. The use of Iron Crosses fixed to the Back, the Shoulders and Neck, is excellent to keep the Parts even with one another; 'tis the industrious Chirurgeon's Task to invent Machines capable of engaging this Deformity, and correct it as much as he can, especially taking care not to press the Parts contain'd in the *Thorax*, which cannot be too free in their Motions, which are so necessary to Life.

The *bleeding of the Jugularr* is perform'd on one of the *Of the A-* Veins of that Name. Of which there are four, two internal PERTURE of which receive the Blood from the *Sinus*, or Cavities of the *the JUGU-* *Dura-Mater*, and which pour it into the *Vasa Subclavia*; and LAR. two external, which receiving the Blood from the Face, and all the external Parts of the Head, discharge it into the same *Subclavial* Vein; it is these last which the Chirurgeon is obliged to open in certain Diseases.

We call these last *external*, because they are more superficial than the others; they are very apparent when full, we see them extended according to the length of the Neck, and there is one on the right, and the other on the left side.

The Aperture of these Veins puzzles the Chirurgeon for two Reasons; the one is, that he can hardly bind the Neck enough to make them rise, for fear of pressing too hard on the *Trachea*, or Wind-pipe, which is the Passage of Respiration; and the other is, that the Skin which covers it, not being very firm, he can hardly command it: Yet it must be open'd, and let's now see how we fix on it.

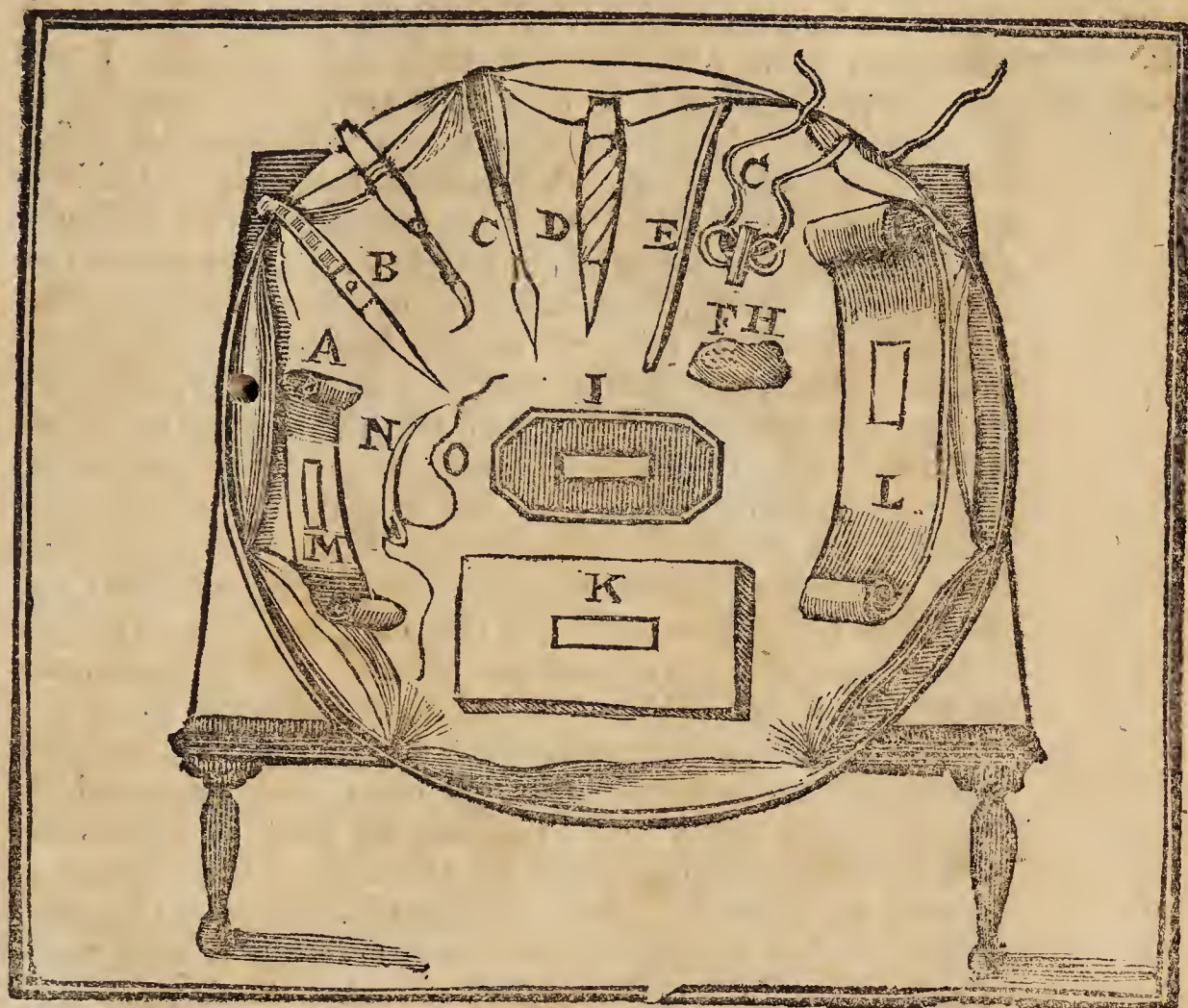
We place the Patient in his Chair or Bed, or on a Couch: *The Ope-* We take a Handkerchief to serve for a Ligature, which we roll *ration.* up in the shape of a Sausage, we put the middle behind the Neck, and proceeding with the two ends, bring them to cross at the upper part of the *Sternum*, and give them to the Patient to hold in his two Hands, that he may not draw them closer than will allow him the liberty of Respiration. The Chirurgeon holds in his Mouth an open Lancet, as in ordinary Bleedings,

and then taking it in the Right-hand or the Left, according to the Side on which we are to bleed, and with the other Hand fixing the Skin by drawing it betwixt two Fingers, we perform the Punction in the Vein, then the Elevation to cleave or slit the Vessel in withdrawing the Lancet; this Orifice must be larger than that in bleeding of the Arm, because the Veins are groffer than those of the Arm.

*What is to
be put on
the Orifice
after the
Bleeding.*

We draw the necessary quantity of Blood, and such as is order'd by the Physician, who ought almost always to be present at these sort of Bleedings, because sometimes the Patient swoonds away by the sudden loss which the Organs, contain'd in or about the Head, suffer of part of the Blood which animated them; or else some other critical Symptoms supervene, which ought to alter the treatment of the Patient: The Ligature being taken off the Blood ceases to come out, because it falls perpendicularly into the *Subclavial*; but yet we put on a Bolster, and above that a Band, which we turn about the Neck, and draw but moderately tight, fastning it; 'tis one of the Bleedings which the Candidates, in order to become Master Chirurgeons of *Paris*, are accusom'd to perform in the Bleeding Week.

FIGURE XXIX. APPARATUS for the BRONCHOTOMIA.



Bronchotomia is an Operation by which we open the *Trachea*, Of BRON-
 otherwise call'd the *Aspera Arteria*, or Wind-pipe, in cr- CHOTOMIA.
 der to make way for the Air to enter into the Lungs, when its
 passage thither is by any Obstacle obstructed. *Fabricius* tells us,
 That he always look'd on this Operation as one of the most
 principal and necessary in Chirurgery. And really, as soon as
 we have perform'd it on a poor Patient, who is stifled for want
 of Respiration, by making a small Orifice betwixt the two
Bronchia, or two Rings of the *Trachea*, and thereby given
 egress and regress to the Air, we see him restor'd from Death
 to Life, at the very instant; and this Effect is so quick and
 sensible, that it seems a Miracle.

The word *Bronchotomia* is derived from *Broncos*, which sig- *Etymology*
 nifies *Bronchia*, or the *Ramifications of the Wind-pipe*; and *Te- of the word.*
mein, to cut: Though indeed the *Bronchia* are not cut in this
 Operation, but we make only a slight division betwixt two
Bronchia. The Name of *Laryngotomia*, by some given to this
 Operation, does not at all suit it, for it does not touch the

Larynx, but, on the contrary, one of the Cautions requisite to its performance, is to keep as far distant from that Part as possible, that the Incision may not augment the Inflammation on its Muscles.

Disputes
betwixt
Authors on
this Head.

There is a great Contest amongst our Authors, whether this Operation ought to be practis'd or rejected, and those of each side don't want Arguments to back their Opinion. I will repeat what is alledg'd by both, that you may be enabled to form the clearer Judgment of what is to be done in this Case.

Those who disapprove this Operation say, that 'tis absolutely useless in several Cases which are attended with a difficulty of Breathing; as when this difficulty of Respiration depends on an *Apoplexy*, *Plurisie*, *Peripneumonia*, or a Plenitude in the Passage of the *Trachea*; and that 'tis only serviceable in the *Quinsie*; and even in that case is prescrib'd so late, and when the Patient is so near being Suffocated, that the practice of it hastens his Death, so that in performing it, the Chirurgeon incurs the Scandal and Contempt of the Publick, who instead of charging the Death of the Patient on the Disease, which was Mortal, accuse the Chirurgeon of having Suffocated him; and *Fabricius* himself, who praises this Opinion, says, That the Chirurgeons of his Time did not dare to venture on it; and that, in imitation of them, he had never perform'd it.

The Reasons of those who advise it are, That 'tis never made use on but as the last Remedy, all other being vain, and the Patient being stifled and struggling for want of Breath, and when there are Signs that all the Obstacles to the entrance of the Air are above the *Larynx*: They add, That this Operation is not in it self dangerous, nor can it be attended with any ill Consequences, the Orifice which it makes being one of those which easily heals with a little patience; nor is the performance of the Operation harder; and supposing that it should not answer its proposed ends, and the Patient should dye, 'twould not be that, but the Disease, which must have kill'd him; that the Chirurgeon had discharg'd his Duty in trying an uncertain Remedy, rather than suffer the Patient to perish: And lastly, that we ought not to value the erroneous Argumentations of the Publick, who, ignorant of the necessary Consequences of a Distemper, are accustomed to ascribe sinister Events to the Circumstances which accompany them.

The Disease which obliges us to the performance of the *Bronchotomia* is the *Quinsie*, or *Squinancy*, of which there being several Species, and this Operation being serviceable only in one of them, we are obliged to distinguish that exactly from the other.

Two sorts of
Quinsies. Authors lay down in general two sorts of *Quinsies*, the *Bastard* and the *real one*. The *Spurious* one is a Settlement of Serofities or Phlegm, which soaking into the Glands of the Throat, is not attended with either Fever, Inflammation, or

any

any great difficulty of swallowin or respiring: The *real one* is an Inflammation and Swelling i the Muscles of the *Larynx*, accompanied with a Fever, an ardent Heat in the Throat, difficult Respiration, Suffocation and Pain in the Part; the Patient cannot continue lying, and all Liquids, as Broth and Drink which he swallows, return through the Nose.

But there are two sorts of these *Genuine Quinsies*, one *Ex- Two sorts*
ternal, the other *Internal*; the former is an Inflammation of *of Genuine*
the exterior Muscles of the *Larynx*, in which the Throat seems *Quinsies*.
more tumefied without than within; and then is less dangerous, because the Tumour throwing it self outward, does not press on the Passages of the Air, nor those of the Victuals and Drink: The *Internal* consists in an Inflammation and Inflation of the interior Muscles of the *Larynx*, which are four small ones, situate internally within the *Larynx*; two of them are call'd *Arytanoïdes*, and the two others *Thyroarytanoïdes*. Their Function is to shut the *Arytanoïde Cartilage*, which is shap'd like the Snout of an Ewer: When these Muscles are swell'd they press the Cartilage so close, that the Air not being able to pass the Patients are ready to be stifled; and 'tis this *Quinsie* which for that reason is adjudg'd mortal, and which requires our help.

We suppose the Patient to have been plentifully blooded on the Arms, and also on the *Jugular*; that all the Medicaments proper, and which are usually prescrib'd in this case (in which our Business is to relax the musculous Fibres, and decrease the Effervescence of the Blood) have been tried; also that we are certainly satisfied that the hindrance of Respiration depends on the *Larynx*, that the Patient has a sufficient portion of strength, that there is room left to hope, that by introducing the Air into the Lungs, we may save the Life of the Patient, and that he would infallibly dye without the Operation, on which both Parties unanimously agree; 'tis to be perform'd in the following manner.

Before the Operation, the *Apparatus* is to be dispos'd as you *Precaution*
see in the XXIXth Plate, and laid in a Basin or Dish which a *before the*
Servant is to hold, then the Patient is to be plac'd at the best *Operation*,
Advantage. Some will have him laid down for the convenience of the Operator; others pretend that he ought to be sitting, in order to his breathing the freer during the Operation; some place him half lying, with the Head leaning backwards, that the Neck may offer the fairer; and others oppose that Posture, alledging that 'tis the way to make us strangle the Patient when the Neck is inflam'd, and there is a considerable Swelling on that Part: But we leave it to the Chirurgeon's Discretion to place his Patient in the most convenient Posture for both of them. Then he marks the place where the Orifice is to be made; which some will have to be betwixt the first and second of the *Bronchia*, when the Tumour is not large; and when the Throat is very much swell'd, they advise the opening it betwixt the

third and fourth, to keep it at a distance from the *Larynx*: But sometimes that Part is so tumefied, or the Patient so fat, that by the touch we cannot tell the number of the Cartilages, in which case we are to mark the Place an Inch below the *Larynx*,

The first
Part of the
Operation.

In the Operation the Chirurgeon is to pinch up the Skin at the before-mark'd place, cause it to be held on one side by a Servant, and on the other hold it himself with his Left-hand; then with a small strait Incision-Knife A cut the Teguments on the place mark'd as above, and having loosen'd them, he separates with the Gum-Lancet B the Muscles *Sternothyroides*, which ascend from the *Sternum* along the *Trachea*, in order to insert themselves into the lateral Parts of the *Cartilage Thyroides*: These Muscles being separated from each other, we discover the *Bronchia* of the *Trachea*, which are the cartilaginous Rings, plac'd and fix'd one above another, by their Union forming a Conduit continually open, which is call'd the *Trachea* or *Aspera Arteria*.

Second
Part.

The Chirurgeon then takes a small Instrument shap'd as is that mark'd Letter C, and call'd the *Bronchotomist*; or, if that be wanting, the arm'd Lancet D, wrap'd about with a small Band, to hold it and its handle firm; he strikes it in betwixt two Rings, but not too deep for fear of pricking the hind part of the Wind-pipe. Before he draws out the Instrument he introduces into the Orifice the Stiletto E, which serves to make way for the entrance of the little Silver Pipe F, which must be short, lest it reach to the bottom of the *Trachea*, and bor'd through at the end, to leave room for the egress and regress of the Air, besides which 'tis to be flat to accommodate it to the space betwixt the two *Bronchia*, and have two little Rings at its head provided to run through the Riban G, to fasten it about the Neck; when the Pipe is fix'd, the Air enters and issues out freely, and the Operation is finish'd.

Excellent
practice of
some.

Some will have this Operation perform'd by a single Punction, and that with the *Bronchotomist*, or the Lancet, we open the Skin, and the space betwixt the *Bronchial Cartilages*, and that we don't draw out the Instrument which is entred the *Trachea*, before we have introduced a Stiletto in order to guide in the Pipe; pursuant to this Method the Operation is sooner finish'd, less cruel, and the Orifice easier healed.

Dressing.

After the Operation a small interval of rest is to be given to the Patient, in order to allow him some breathing time; then he is to be dress'd, by applying to the Orifice a little bit of Sponge H, dipt in hot Wine, and squeez'd before 'tis laid on: We are not to thrust in any Cotton or Lint, for fear lest the Air should force into the *Trachea* some Particles of them; which would occasion a violent Cough, not unlike that which happens to those, on whose *Larynx*, either by Laughing or Speaking whilst Drinking, some drops of Liquor fall, which is vulgarly called going the wrong way. If the Sponge be too subtil or too thick, so that the Air can scarce enter, it must be chang'd,

or

or not at all apply'd ; because the sole Incentive to the performance of this Operation, is the procuring a free Passage for the Air. We are next to apply the Plaister I, a Bolster K, and the window Bandage L, which is to be but moderately tighten'd, by reason that these Parts being nervous and very supple, cannot possibly suffer any restraint without being very much incommoded.

This dressing *Apparatus* must not continue on above three or four Days ; for in that time the Patient is dead, or the Obstacle which hinder'd the entrance of the Air is remov'd ; so that the Inflammation ceasing, the Swelling abated, and the Air re-assuming its natural course, we are to take out the Pipe, and apply our selves to heal the Orifice. To this purpose we close its Lips with incarnative Bandage M, which is perform'd by placing the middle of the Band to the Nape of the Neck, from whence 'tis advanc'd forwards, so that the ends cross each other on the Orifice ; by which means, and the assistance of a Balsam laid on them, we endeavour to reunite these two Lips as soon as possible.

If Bandage prove vain, we are to make use of two or three Stitches with the curve Needle N, threaded with the wax'd Thread O ; for we cannot make too much haste in the healing a Wound in the Wind-pipe, considering that the Air which enters by that Orifice, is look'd on as an exotic Air, because not modify'd and temper'd as it ought to be by the Mouth and Nostrils, before it comes to touch a substance so nice as that of the Lungs, which it may very much fatigue. This Cure, when in the Hands of a good Chirurgeon, is easily perform'd, by reason he proceeds in it methodically, and consonant to the establish'd Rules of the best Practice.

Some Authors believe it to be difficult, and scarce possible : They alledge, that these Parts being Cartilagineous, cannot re-join like the Carnuous ones ; but Experience utterly destroys this Argument. *Fabricius* affirms, that a Servant-Maid which had cut her Wind-pipe was cured ; and at *St. Germain* I dress'd a Man who receiv'd a Pistol-shot, at a Boar-hunting ; the Bullet entred at the right side of his Neck, and came out at the left, piercing the *Trachea*, notwithstanding which I perfectly cured him.

The End of the Fifth Demonstration.



THE
Sixth Demonstration
OF
Chirurgical Operations.

*Of the Operations practis'd on the Head
and Eyes.*

And first of the TREPAN.

GENTLEMEN,



F all the particular Operations requir'd by the Diseases of the Head, scarce any of them are so considerable, or occur so frequent, as that of the *Trepan*: We shall add those perform'd on the Eyes, and the parts dependant on them, in order to fill up the space of time destin'd for our Demonstration.

*Operations
anciently
practis'd.*

'Tis indeed true, that the Operations practis'd on this part by the Ancients were very numerous: They made in the front three Incisions long ways to the Bone, of two Fingers breadth in length, in order to cut all the Vessels betwixt two direct deep Cuts; they call this Operation *Hypospathismus*, from the
Name

Name of the Instrument used in it, which is shap'd like a *Spatula*. They also made an Incision below the Coronal Suture, which extends from one Temple to the other, and penetrates to the Skull, from which they separated the *Pericranium* or *Hairy-Scalp*: They bestow'd on this Operation the Name of *Periscyphrismas*, from *Peri*, about; and *Skitizein* to Flea or Flay. They also apply'd Cauteries, both potential and actual, to the Coronal Suture, to correct, as they pretended, the cold and moist *intemperies* of the Head: Their design was by these means to hinder the falling or settlement of Humours on the Eyes, and several other parts, and so to prevent an infinite number of Diseases; but they are thought so cruel, that they are not at all practis'd at present.

The Operation of the *Trepan* which I propose to demonstrate to you, is not proper for Wounds on the *Hairy-Scalp*, nor those on the Teguments of the Head; wherefore I forbear to treat of those Wounds, and it being only applicable to the Wounds of the *Cranium*, (even in some of which 'tis also unnecessary) I must then specify the difference betwixt them, that you may be instructed which are those that require the performance of it, and also those which may dispence with the use of it.

The Species of fractures of the *Cranium*, or Skull, are very Different numerous, and are all distinguished by their particular Names; sorts of which being invented by the *Greeks*, the *Barbarity* and harsh- fractures nefs of their pronounciation may affrighten the young Chirur- of the geon, to whom they may at first seem therefore very difficult *Cranium*. to remember; but when never so little accusom'd to them, they will agree that 'tis not easie to invent any shorter terms, whose Etymology shall so clearly express the Nature of the thing.

I reduce them to twelve, all which I intend successively to explain to you. I shall first recite their *Greek* Names, then give you those which the *Latins* have impos'd, and next proceed to those in the vulgar Language which we all know; this Method will give you such an Idea of them, as will imprint them in your Memories without much difficulty.

Hedra, derived from *Hezein*, to sit, in *Latin* *Sedes* or *Vestigium*, signifies a Mark or Seat, and is a bare Incision in the Skull, in which the Stroke has only left a superficial Mark, dra or without penetrating any farther, Mark.

Eccope is deriv'd from *en*, which signifies betwixt, and *Coptin* to cut, in *Latin* *inciso* or *exciso*, Cutting or Incision; The Ec- and is a Solution of continuing in the Bone, which extends cope. no farther in the part, than the Instrument which made the Wound.

Diacope comes from *Dia*, which signifies thro', and *Coptin* Diacope. to cut, in *Latin* *Praciso* or *Dissectio*, Cutting thro' or Dissection, and is a sort of fracture of the Skull occasioned by an oblique Stroak,

Stroak, by which the piece of bone is not taken off above half way.

Aposceparnismus. *Aposceparnismus* is derived from *Apo*, which signifies to cut off, and *Sceparnos*, a Hatchet or Axe, in Latin *Dedolatio*, that is, *Hewing or Chipping*, and is a Solution of the Continuity of the *Cranium*, in which a piece of it is taken off, as tho' 'twere cut by a Hatchet or Ax.

Trichismus. *Trichismus* comes from *trix*, a Hair, in Latin *Rima Capillaris*, a hairy Cleft, is a Fracture in which the Cleft of the Skull is so small and fine, that it resembles a Hair; and to discover it, the Chirurgeon is sometimes obliged to ink the Skull, that after wiping it off, he may discover the Cut by the Mark left by that Tincture.

Rogma. *Rogma*, or *Rhegma*, from *Regnyin* to divide, in Latin *Rima*, *Scissura*, a Slit or Crack, is an apparent Cleft, which extends beyond the Blow given by the Instrument, and by which the Bone is not dislocated, but its divided Pieces remain even and continu'd; these Cracks of the Skull are like those in Earthen Ware.

Apikima. *Apikima* from *apo* and *kima*, which signifies to redouble a Noise by *Eccho*, in Latin *Resonatio*, a Counter-blow, or Thrust, is a sort of Fracture of the Skull in the opposite Part to that which immediately received the Blow.

Tlasis. *Tlasis*, or *Phlasis*, in Latin *Contusio*, a Contusion or Collision, that is, a racing or rubbing, it is a Contusion of the Bone caused by some external Strain, or a Dent occasioned by some Violence offered to the external Superficies of the Skull, which is penetrated without any Cleft, like the indented Bruises in Pewter Pots.

Entlasis. *Entlasis*, or *Ecphlasis*, in Latin *Intreitus*, *Defidentia*, is a depression or flat indenting of the Skull, composed of several Cracks, and broken into several pieces.

Ecpiesma. *Ecpiesma* derived from *Ec*, without, and *Piezein* to press, in Latin *Depressio*, a Depression, or thrusting in and splintering, is a Rupture of the Skull into several pieces, all, or some of which press on, and hurt the Membranes.

Engizoma. *Engizoma* is derived from *en*, which signifies within, and *gissin* to bend, in Latin *Appropinquatio*, an Approach, is a Fracture of the Skull, in which one of the ends of the Bone being separated, is sunk in upon the *Dura-Mater*, and the other raised upwards almost perpendicularly.

Camarosis. *Camarosis* from *Camara*, which signifies a Vault, in Latin *Testudinatio*, or *Fornicatio*, the Vault or vaulty Fracture, is a Species of Fracture of the Skull, in which the middle of the broken Bone rises in form of a Vault, and resembles the Back of a Tortoise.

Reduction But I reduce all these Fractures to three kinds, which are of them all either those that come under the Denomination of Incisions, to three. Clefts

Clefts or *Cracks*, and *Contusions*, which comprehend the twelve abovementioned Species.

The *Incision* is a small Wound in the Skull, which goes no farther than did the Instrument with which it was made: This contains all the four first sorts, viz. the *Hedra*, which is no more than a simple Mark or Scratch; *Eccope*, which is a small Incision; *Diacope*, which leaves the piece of the Bone; and the *Aposceparnismos*, which cuts off the piece of the Bone, as tho' 'twere done with a Hatchet. The Inci-
sion.

The *Cleft* or *Crack* is a Solution of the Continuity of the Skull, which reaches farther than the Weapon which gave the Stroke, and comprehends three sorts of Fractures, viz. the *Trichismos*, or the Capillary Scissure, the *Rogme*, or apparent Crack, and the *Apechima* or Counter-blow: For which three Species the Operation of the *Trepan* is proper. The Cleft
or Crack.

The *Contusion* is a violent Depression made by some bruising Instrument, which breaks and separates the Parts of the *Cranium* before united together; under this Species are contain'd five sorts of Fractures, viz. *Tlasis*, or the *Indenture*, without apparent Fracture; the *Entlasis*, or bruising or breaking of the Bone; the *Ecpiesma*, or Splinters pressing on the *Dura-Mater*; the *Engizoma*, where the Bone shews it self like a Bridge drawn up; and the *Camorosis*, where the Bone assumes the Shape of a Vault, or that of a Tortoise-shell. These five sorts of Fractures cannot be cured without the Assistance of the *Trepan*, except the *Tlasis*, in which the Bone in Children may fly back again, and refix it self immediately after the Reception of the Blow. The Conta-
sion.

Authors agree on all these Fractures of the Skull, except the *Apekima*, which is the *contra Fistura*, or opposite Cleft, or Counter-blow.

All the Ancients assert it as a certain Truth, and speak of it, as though they had several times seen it happen; they will have it, that the internal Air being forced by the Violence of the Blow against the Part opposite to that which was struck, cleaves the former rather than the latter, that being much more disposed to crack than this; and this they call the Counter-cleft, or opposite Crack. But some of the Moderns dispute the Truth of this Opinion, believing that they can prove by Physical and Demonstrative Reasons, that 'tis impossible that this Counter-blow should ever happen, because the *Cranium* being composed of several pieces loosely join'd together, breaks the Blow; and that the Brain is not like Earthen Ware, which, by an elastic Force, sometimes breaks at the opposite Part to that which received the Blow; for the strict Connexion of their Particles causes them to resist all at once; and when their Union and Firmness is less in one place than another, 'tis there they break. They add, that these Ancients themselves, by prescribing the Use of Sutures to hinder the Fracture passing from one Bone Of the
Counter-
blow.

of the Skull to another, contradict the Principles on which the Counter-blow is founded: They maintain, lastly, that if there happen any Cracks in other places than that which directly received the Blow, they proceed from a second or third Blow, or another Fall which the wounded Patient does not remember, by reason that being stunn'd by the first Blow or Fall, he was thereby rendered incapable of knowing what passed afterwards.

*Instances
which prove
it.*

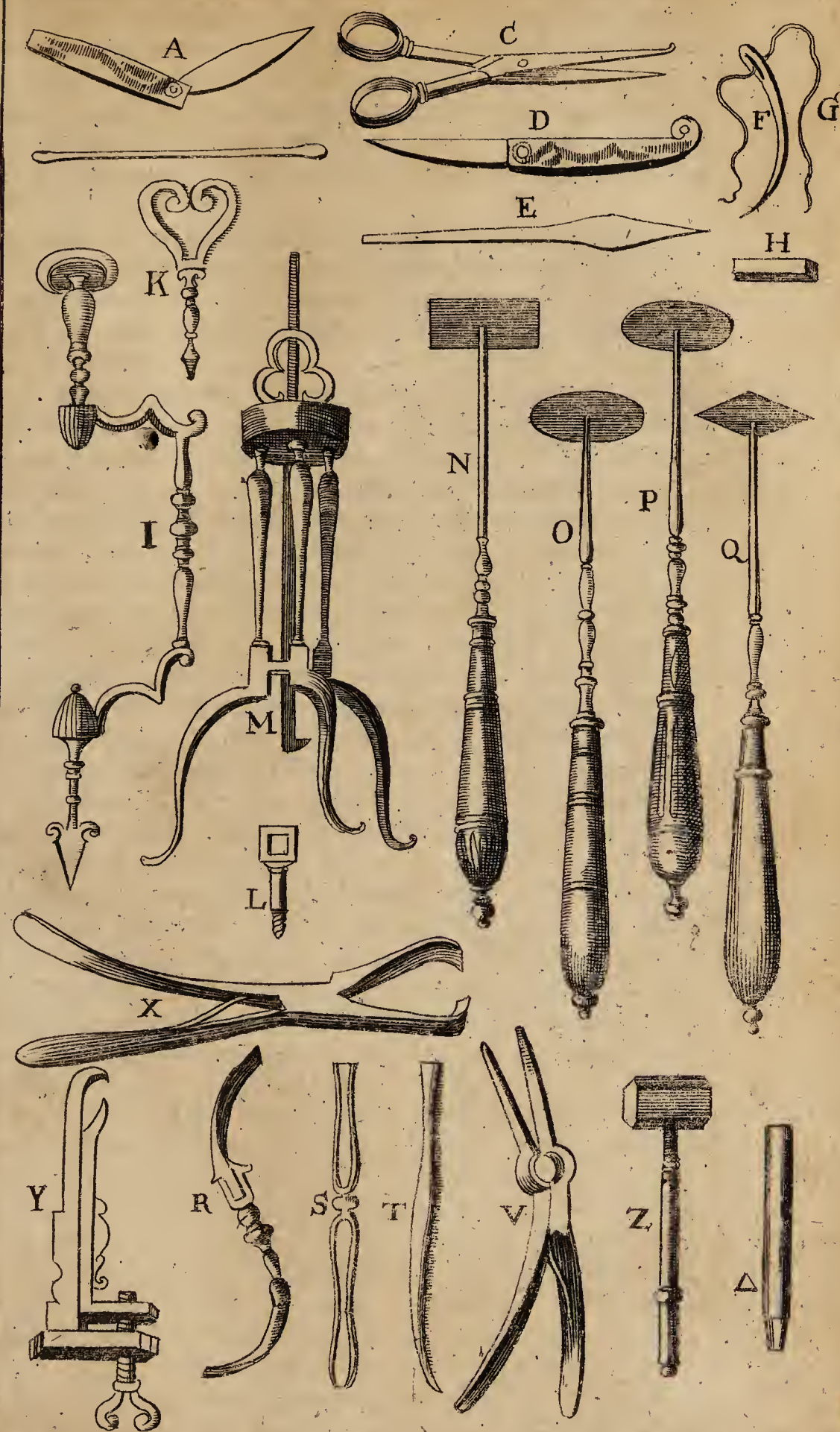
I should also be inclined to the modern Opinion, if two Instances which fell under my Hands did not confirm the Sentiment of the Ancients: They are, *viz.* In the Year 1690, one of the Duke of *Chevreuse's* Grooms going to water his Horses, fell off, and pitch'd his Head on the Pavement; he was brought back to his Lord's House senseless. I was immediately called, and found a Wound on the coronal Suture, which I sufficiently dilated, in order to apply the *Trepan*; on the next Day, having seen the Fracture of the Bone, I trepann'd him, and he remain'd yet senseless. Three days afterwards a Tumour appearing on the *Occiput*, I open'd it, and observing a Fracture there, I a second time trepann'd the Patient, a great deal of Blood issuing out at each Performance, and in proportion to the flowing out of that Liquid, the Senses returned; I continued to dress, and cur'd the Patient. In 1692, a Girl aged 9 Years happening to be amongst some people who were playing at Nine-pins, the Bowl, which was thrown up into the Air, instead of falling amongst the Pins, fell upon the Head of this little Girl, who fainted away; she was carried to her Father, who kept a Publick House near the *Recolet's* College. I was sent for, and observed two great Contusions on the *Os Parietale* or *Sinciput*, I open'd the biggest of them, in which I discerned a Fracture of the Bone, which I trepann'd; two Days after finding the other Contusion not decreasing, I was obliged to open it; and finding there another Fracture, I could not avoid trepanning that also; upon which the Patient grew sensible, the Symptoms diminished as the Wound suppurated, and she grew well. The first of these Instances proves the counter or opposite Blow; and the second shews, that it may flie from one part of the Head to the other; for 'tis not easie to believe, that each of these Patients received two different Blows, just at the places where the counter Blows are affirmed to happen.

*Two sorts
of Signs.*

The Signs of Fractures of the *Cranium* extracted from the best Authors, and ranged in order by the Moderns, are of two sorts, either *sensible* or *rational*.

The *sensible* Signs are those which fall under the Sense of the Patient and the Chirurgeon. Those which regard the Patient, are the hearing of a Noise, and the cracking of the Bone at the very Moment he was wounded; his hearing upon striking on the discovered Bone a noise like that of a crack'd Pot, of feeling a painful shaking of the wounded Part, when he bites

Fig. XXX. For the Fractures of the Cranium. Pag. 270.



bites any thing hard with his Teeth: But this last Sign is uncertain; for I have seen some who held a Handkerchief betwixt their Teeth; and upon drawing it out, were not sensible of any Pain in the Wound, though their Skull was broken; and others who felt it, though they had no Fracture, by reason the Wound was on or about one of the *Crotaphites* or *Temporal Muscles*, to which either any Effort or Motion of the Jaw easily communicates it self.

The Signs on which the Chirurgeon forms his Judgment, are such as either result from his Sight, when the Fracture is so apparent as to be obvious to his Eyes; or from his Touch, when he can feel with his Finger, or with a Probe, an inequality of the Bone.

The *rational Signs* depend on the efficient Cause, the nature of the Wound, and its Symptoms. With regard to the efficient Cause, three things are to be considered; First of all, the Person which gave the Blow, whether strong and robust, whether he struck in Rage, and with Violence, and whether he stood higher than the wounded Patient; all Circumstances which denote that the Blow was given with more force; whereas their Opposites hint the contrary: Secondly, With what Weapon the Blow was given; for Instance, if with a Stick, we are to consider its Dimensions, whether thick or small; its Make, whether of a heavy or light Wood; its Figure, whether even or uneven, round, square, or triangular; and lastly, its quality, and the form of the Substance, whether an Instrument of Iron or Lead, sharp-edg'd and cutting, or blunt and bruising; or if 'twas a Stone, whether large or small, whether it fell from a very high Place, &c.

Concerning the nature of the Wound, first of all we are to examine its Dimensions; for the larger it is, the more reason there is to suspect a Fracture; secondly, whether 'tis accompanied with a remarkable Contusion, which will shew that the Blow was bruising; thirdly, its Situation, because being on a thin Bone, as the *Parietal*, or *Sinciput*, 'tis more likely to be crack'd than the *Occiput*.

On the Symptoms or Accidents, the Chirurgeon is to observe of what nature they are, there being *primitive* and *consecutive*; the former happen at the instant of the Receipt of the Wound; for instance, the Patient was stunn'd, as is an Ox when knock'd down, and fell like a Sack of Corn; there followed immediately a Flux of Blood at the Mouth, Nose or Ears, with the Loss of Judgment, Voice and Memory: The *Consecutive Symptoms* come after the Fracture, as Nauseating, Vomiting, a Fever, and Drowsiness.

The Knowledge of all these Signs is of use to the Chirurgeon, to enable him to give his Judgment, which he forms from three Particulars, from the nature of the Wound, the Part wounded, and the Symptoms: First from the Wound, which may be

be large only in appearance, as in those given where there is a great Confusion, as in the Army; or its *Consequence*, as those call'd *Trichismus*, and *Rogme*, which seem but small Clefts, and yet are more dangerous than those which are deeper: Secondly, the Part, which is here taken universally deduced from the whole Body, as the Age, Temperament and Strength; or particularly, *viz.* for the Place of the Wound, which is more dangerous when in the fore-part, because the Bones there are thinner, than when in the hind, where they are thicker; the Danger is yet more eminent on the Temples, by reason of the Tenderness of those Bones, and the Muscles *Crotaphites*, which are very subject to Convulsions: They are also very dangerous on the *Calva*, or Crown of the Head, on the right of the *Fontanel*, because the Bone is there very thin, and the Blow there falls more perpendicularly; on the *superciliary Sinus*, or Cavities, by reason of the mucilaginous Liquor which issues out; and more dangerous on the Sutures than elsewhere, because of the Laceration of the small Fibres, and the Vessels which move, in order to keep up the Communication of that Place with the *Dura-Mater*, which occasions an Effusion of Blood in those Parts; Thirdly, the *Symptoms*, which are either *Universal*, as Fevers, Phrensie, Convulsions and Palsies; or *Particular*, which are either *good*, as a small Tumour, a Vermillion-colour'd Flesh, and a right Suppuration; or *ill*, as a livid and blackish Colour, a Contusion of the Flesh or Bone, a sanious Matter, a viscous Consistence, and a Roughness of the Bone which ought to be smooth and even.

First Precaution.

The Chirurgeon carefully observing what I have just laid down, may form his Prognostick, which ought to be always dubious, particularly in Wounds of the Head, for some of them which seem very slight in the beginning, prove the direct Road to the Grave; he must be upon his Guard, and sufficiently bleed his Patient, to hinder the Extravasation of Blood in the Brain, and not imitate the Chirurgeon of a certain Person of Quality at Court, who would not bleed a Lieutenant of the King's hundred *Switzers*, who had a great Contusion on his Head, occasioned by a Fall which he got in hunting; the extravasated Blood imposthumated, and he died within 40 Days.

'Tis a Mistake which ought to be removed, that after forty Days the Danger is over: 'Tis indeed true, that at the Expiration of that Term, there is Reason to hope so; but so many have been seen to die of their Wounds after that time, that we cannot promise our selves any thing certain on that Head. If the wounded Person commits any Debauch with Wine or Women, if he is exposed to great Heats or Cold, if he is of tender Constitution, and his Pulse does not re-assume its former Vigour; or lastly, if he don't take care of himself, he runs risque even after the sixtieth Day. The Civilians have laid down as a Rule amongst them, that the Dangers are over a

ter the Expiration of 40 Days; and that if any of these Patients die then, their Death was not caused by the Wound; because 'tis requisite the Judges should have a fixed time to condemn or absolve those which wounded them; but a prudent Chirurgeon ought not to answer for any 'till after the Expiration of the hundredth Day.

The Cure of Wounds in the Head, in which the Skull is not concerned, does not any otherwise differ from those of other Parts, than in some Circumstances which are to be observed. First, before all things the Hair must be shorn off; to perform which with the less Pain, we are to moisten the Place with Water and Oil mixed together, (to which we give the Name of *Hydroleum*.) taking care that none of the Hair get into the Orifice; but if we cannot prevent it, the Wound must be washed with warm Wine before 'tis dressed. Secondly, The Patient is obliged to fortifie himself more against Cold in Wounds of the Head, than in other; because 'tis an Enemy to the Brain, and nothing ought therefore to be applied to them, which is actually cold. Thirdly, At the beginning we lay the Patient on the Part opposite to the Wound, to avoid Fluxion and Pain, and afterwards the Inflammation being over, and the Suppuration supervening, we cause him to be laid on the wounded Place, that the Pus may come out of the Wound with the greater Ease.

The Wounds which immediately discover the *Cranium*, and those in which it discovers it self by the Corruption of the *Pericranium* afterwards, the Bone not being hurt, need not any other Treatment than simple Wounds. Those caused by a Contusion, must be longer suppurated than those made by Incision; and when the Brain is but very little discover'd, the Wound must not be too much stopt or tented, but we must leave the Bone at liberty to cover again, which it sometimes does without coming to an Abscess, especially in Children. But when 'tis much stript, that is, come to Exfoliation, to which it comes in more or less time, according as the Patient is more or less moist, or dry; we are not to apply any thing Unctuous to the Bone, but only lay on a Pledget dipt in Brandy or Spirits of Wine, impregnated with a Tincture of *Aloes*, or else we pour on the Bone a little of *Fioravanti's* white Balsam. The Exfoliation which happens is not always sensible, that is, we don't actually see a Leaf or Slip of the Bone separate all in one piece; but 'tis sometimes insensible, coming away with the Suppuration by small imperceptible Parcels: But whether it happen one way or the other, when we see any Flesh sticking to the Bone, we suffer it to re-unite with that of the Lips of the Wound, in order to procure its cicatrising well.

Figure of
the Prepa-
ratory Inci-
sions for
the Tre-
pan.

When there are Signs that the Bone is hurt, and we think it necessary to use the *Trepan*, if the Wound is not large enough to apply it, we must dilate it. The Incisions used in these sorts of Wounds, must be made in the shape of an X, a T, an N, or the numerical Figure 7: These are the most common Figures which we give to these Incisions, according to the nature of the Wound. Those form'd like an X, which are also called cross ones from their Resemblance to a Cross, are made on the middle of the *Coronal Bone* and the *Parietales*. When the Wound approaches some Suture, the Incision is made like a T, cutting that Branch of the Wound nearest the Suture; but we also prolong the opposite Branch, in order sufficiently to discover the Skull. Those made near the *Temporal Muscle*, or the *Sutures*, are shaped like an V, or Figure of 7, to avoid the stripping of the Parts: By in general, we comply with the Figure and Situation of the Wound, which does not always permit us to shape it as we please.

Practice
with re-
gard to se-
veral Con-
tusions.

When there is no Wound, and we find on the Head a Contusion, made by some hard Blow received, or by a Fall, in which the Patient has lost his Senses, bleeds at the Nose, Mouth, or Ears; the Contusion is immediately to be open'd by a cross Incision, which is to be made with the Abscess Lancet A. If 'tis swell'd very high, and, in opening it, we find the *Pericranium* separated from the *Cranium*, 'tis a Sign the Blow was very violent, and that we must proceed to the *Trepan*: To which purpose we make use of the small flat Silver Probe B. But if the Contusion is a light one, and the Symptoms are not pressing, we endeavour to dissolve it, by shaving the Place, bathing it with Spirit of Wine, laying on it the Betony Plaster, bleeding the Patient, and obliging him to rest very much: Thus 'tis frequently cur'd without opening.

The Appa-
ratus.

If the Chirurgion is obliged either to dilate a Wound, or open a Contusion, he must prepare a quantity of Lint, astringent Powders, and also some small Bits or Buttons of Vitriol, in case of an *Hemorrhage*: Then his Apparatus being disposed, he must cause the Bed to be prepared, that is, a Sheet to be put several times double under the Head, by reason of the Effusion of Blood which will happen, then causing the Patient's Head to be held by a Servant, he makes an Incision where he thinks necessary, to that end making use of the In-

Manner of
performing
this Opera-
tion.

strument which he judges most proper. If 'tis a Wound, and the Probe runs in betwixt the *Pericranium* and the Skull, he may slide in the Point of the Scissars C, the same way, and so discover the Skull; and when all is adherent, he uses the strait Incision Knife D, and resting his Fore-finger on the back of that Instrument, cuts through to the *Cranium*; and then with the Myrtle-Leaf-Knife E, he raises and widens the edges of the Wound, and separating the *Pericranium* as gently as possible, in order to abate the Pain, which never fails of being very pun-

gent

gent in that Moment, by reason of the Tension of the nervous Membranes, the Divulsion or Laceration of which are hereby occasion'd. The Wound being sufficiently dilated, it must be dressed with dry Lint for the first time, in order to suck up and exhaust the Blood which issues out: If the *Hæmorrhage* be great, the bottom of the Wound being stop't with Linten Tents, to clear its Lips, we finish with Covering them with flat Pledgets charg'd with Astringents, on which we lay a large Plaister, Bolsters, and over all bind on the *Cover-chief* or Head-bandage, which I have shewed you amongst the Bandages in the first Demonstration. If an Artery be open'd, which ejects a great quantity of Blood, to the stopping of which Bolsters and Bandages have been in vain apply'd across it, the Apparatus is to be taken off, in order to lay on the Place at which the Blood flows out, a small Caustick Button, or bit of Vitriol: But the best way is that propos'd by *Parey*, which is to pass through the curve Needle F, threaded with the wax'd Thread G, above the Vessel, which entring on one side, and piercing the *hairy Scalp* so that the Thread takes in the Artery, we herewith bind it up, making a Knot with the two ends of the Thread on a small Linnen Bolster H; and, by this Means, we securely stop the Flux of Blood, and avoid the Scar which the Vitrioline Button would produce.

The next Day, at the Expiration of twenty four hours, the ordinary time of taking off the Dressing or Apparatus, we then see the Bone uncovered, and search it to see whether 'tis wounded, being very careful that we be not deceived; for the Incision being made on the Level, the Point of the Knife may have left on the Skull a long Scratch or Track, which may resemble a Cleft or Crack: We are also carefully to avoid being mistaken on the Sutures, which, in some Patients, divide into two Parts the *Coronal*, as well as the *Occipital Bone*, which we are to treat in the same manner as Fractures. If we find a sinking in, we must raise it again: If the Wound be but a bare Cleft, it is to be scraped with a sort of Tooth-scraper, according to the ancient Practice: If there are Splinters which prick the *Dura-Mater*, we remove them; if there are others whose Points jet outwards, we cut them off; and if there be a Bruise, it must be trepann'd.

I have already told you, that the *Cranium* is sometimes thrust in by a Contusion, which we call *Tlasis*; that in Children, the *Cranium* by a Spring returned to its first Estate: But if it should resettle it self, if the Dent be but small, and free from any Symptoms, we are to leave it so; it may continue, and the Patient recover without any ill Consequences: Whereas if it were large, and might press on the *Dura-Mater* and the *Brain*, we must of Necessity have endeavour'd to raise what was beat or sunk in. To which end we are to make a small Hole in the middle of the Bone with the Gimlet or Terebel-

lum I, which serves to fasten to a Levitor K, which ends in a Screw ; by which Means drawing from within outwards, we endeavour to raise that part of the Bone which is sunk in: If the Hand be not sufficient, the Chirurgeon fixes another small Levitor, L, to the Triploid Elevator Trepan M, so call'd from its three Feet, which we place on the Head ; then turning the Screw, which is at the upper part, we by little and little raise up what was depressed : The Bones being returned to their even Station, we take out both the Trepan and the Levitor, dress the Wound in the same manner, as that where the Bone is barely discovered, and continue the same Course 'till the Cure is compleated, at least if no Symptoms supervene which oblige us to the Trepan.

Formerly, when we found a Crack in the Skull, we made use of the Tooth-scraper instead of the Trepan, this Operation was rank'd with the second sort of cutting, it was practis'd on the hard Parts, the Chirurgeon scraping off the Bone as much as he thought necessary. The use of these Bone-scrapers was so common, that they always had a Place amongst the Trepanning Instruments, and the Cutlers to this Day put them amongst 'em, unless particularly forbidden. Of these Scrapers there are pointed, round, oval, and flat ones, which were alternatively used : For Instance, in a Crack or Cut, the Chirurgeon began to scrape the Wound with the flat Scraper marked N ; then with the oval one O, next with the round one P, which sunk deeper in, and finished with the pointed one Q, which went to the bottom, observing to wet them from time to time with cold Water when he used them, lest they should grow warm with rubbing against the Bone. After the Chirurgeon had found the bottom of the Cleft or Cut, he strew'd it with Cephalic Powders, prepared with *Aristolochia*, *Myrrhe* and *Aloes* ; and by these Means the Ancients thought to avoid the Trepan : But at present these Bone-scrapers are grown out of use, when there is a Crack, because in a Case of that sort, there is always an Effusion of Blood on the *Dura-Mater*, which the Scraper cannot get out, and which absolutely requires the Trepan to make way for it, lest by its continuance there, coming to putrifie, it does not draw on the last and greatest of Evils ; wherefore we don't lose that time in scraping, which ought to be employed in the Relief of the Patient.

Use of the Levitors.

If, by the Aperture, we meet with a denting in call'd *Eccipiesma*, one or several of whose Splinters press on the *Dura-Mater*, we must do our best to raise them up, or take them out, if they are not very fast fix'd. We raise them with one of the three following Levitors ; the first R is curve ; the second S is flat, and the third T is strait, but a little bent at the end ; or else we take them away with the Forceps V, shaped like a Crow's Bill. I have seen Fractures, in which, after having

taken

taken out several bony pieces, the *Dura-Mater* has been discover'd for the space of about half a Hand's breadth, and yet the Patients have recover'd. If some Splinters happen to be so firmly fix'd, that we cannot get them out, we must rather leave them for some time, than commit any Violence in order to tear them out. I have told you, that we are to raise or take out the Splinters, but that was, supposing that we got hold of them, for if we cannot reach them, we ought to perform the Operation of the Trepan on a firm and sound Bone near the Fracture; sliding a Levitor into the hole of the Trepan, we raise up all the Splinters which press on the *Dura-Mater*; and if it be necessary to take them out, we accordingly draw out that which is the easiest loosen'd first, which facilitates the extirpation of all the rest.

The Fracture is an *Engizoma*, in which there are some Points of the Bones elevated outwards, some order them to be cut off with the incisive *Forfex* X, and if we cannot attain our end with that Instrument, that we take the other *Forfex* Y, which goes with a Screw, and will infallibly cut them, by reason a Screw may exert beyond comparison more force than a Hand. There is also invented a little Mallet Z, whose head is of Lead, and a very sharp little Steel Chissel Δ , with which we may cut the Splinters as we would a Stone, and the Mallet being of Lead, the Blows would not so much hurt the Brain, as if it were of a harder substance. But for my part I approve neither the *Forfex*, *Chissel* nor *Mallet*; for if a part of a piece of Bone flies out, the other end must be thrust in; and therefore going roughly to work to disengage that piece, we hazard the injuring the *Dura-Mater*. If I have recited to you these old Operations, 'tis not to advise, nor wholly dissuade the use of them, but only to lay before you the several sorts of Practice, that you may determine which are to be follow'd or rejected on several Occasions.

Of the
Forfex.

Of the
Lead
Mallet and
Chissel.

In short, if the Fracture is such as absolutely requires trepanning, that is an Operation which must not be deferr'd; and, as 'tis one of the most considerable in Chirurgery, and the Practice of which is most frequently necessary, the Chirurgeon cannot be too circumspect and attentive, with regard to all the particulars exacted by Art, in order to the due performance of it.

All the Pains which the Ancients took to invent Scrapers, and other Instruments which you have just now seen, being in order to put off the Trepanning as long as possible; it must have been impossible for them to have rais'd a sinking in, or Contusion, or have redress'd a denting in, or that they should have any certain signs of an effusion of Blood on the *Dura-Mater*, to determine them for that Operation. They waited the Symptoms infallibly pointing out to them the indispensable necessity of performing it, and sometimes those Acci-

dents

*Symptoms
which
ought to
determine
the Chirur-
geon for
the Tre-
pan.*

*An in-
stance on
the Head.*

*Applicati-
on of the
Trepan.*

dents appear'd so slowly, that the Trepan became useless by that time they came to resolve to use it: But being, at present, arm'd with regard to this Operation, we prevent the Symptoms, and believe it sufficient that there are Signs that they may happen, to anticipate them without allowing them time to draw on all the inconveniencies which they possibly may. For Instance, if at the moment the Patient receives a blow on his Head, he falls down senseless, that is enough to justify the Trepanning him; these Symptoms happening at the very instant of the Wound, indicate that the Commotion having been very great, there must necessarily be extravasated Blood: If we wait to discover whether this Blood comes to an Abscess, by certain Signs, as a Fever, pain in the Head, and stupid Dosing, tho' the Trepan should then give issue to that purulent Matter, the ill Impressions and Disorders occasion'd by its continuance, cannot be repair'd by all the good Effects of the Operation, and the Patient can scarce survive it.

This Discourse is design'd only to encourage you in the Practice of this Operation, and prove to you, that the Moments are very valuable, and ought to be well employ'd. A young Lord getting a Fall whilst Hunting with the Duke of *Burgundy*, receiv'd a Contusion on one of the *Parietals*, which was thereby hurt; I made the cross Incision, and Trepann'd him in the presence of Monsieur *Felix*, the whole being perform'd within the first twenty four Hours; the Blow had so stunn'd and stupified him, that before his Cure he was not sensible of his having been Trepann'd: 'Twas that Stupor which made us conclude, that there must be an effusion of Blood in his Head, and we accordingly found a great quantity; if we had stay'd for other Symptoms to confirm us, we had not succeeded so well. To conclude, tho' we equally blame those which are too hasty, and those which defer it too long, yet 'tis better to err on the side of the former than the latter; for tho' pursuant to this Maxim we may happen to trepan some, which the Event may shew might have been exempted from that Operation; 'tis yet most proper in all dubious Cases to have recourse to it, because, generally speaking, no sinister effects can attend the performance of it, and on the deferring of it depends no less than the Patient's Life.

Trepanning, which is deriv'd from the Greek Word *Trepanon*, that is to turn, is a Chirurgical Operation, rank'd in the first Species of piercing, we apply to hard parts, with an Instrument made in form of a round Saw, which is turn'd to raise up part of the Skull, to which it is almost peculiar. Some Authors prescribe it to the *Sternum*, and to the Ribs: I have seen it perform'd on the *Sternum* but in vain, for the Patient dy'd; but I never saw it practis'd on the Ribs, nor can I comprehend how it can be apply'd without breaking such thin Bones: Wherefore we only use it to the Head, where 'tis ab-

solutely

solutely necessary in several Cases, since 'tis an undoubted Truth that many Persons owe their Life to it.

The Trepan is more successful in some Countries than in *Places* others; at *Avignon* and *Rome* it cures all; but fore Legs are *where the* fatal there, and to cure them the Patient must leave the Town. *Trepan suc-*
At *Paris* the Trepan is very successful; and also at *Versailles* *ceeds.*
where very few of its Patients dye: But they all die at the *Hotel Dieu* of *Paris*, by reason of the Infection of the Air which falls on the *Dura-Mater*, and conveys thither its Corruption; which is what ought to be represented to the Administrators, and it is to be wish'd that there was a place in the Suburbs of *Paris* appointed for those Patients wounded on the Head, by which means many would escape, for want of which expedient we see, with Grief, that 'tis fatal to every one.

All Authors point out to us six places to which they forbid *Reasons* the Application of the Trepan. First, to the *Fontanell* of the *which* Head in Children, because the Bone is not solid enough to *hinder the* bear it. Secondly, On the *Sutures*, because of the Vessels to *Trepanning* which they give Passage, in order to preserve the Communica- *of some* tion betwixt the *Dura-Mater* and the *Diploe*. Thirdly, On *places.* the *Superciliary Sinus*, by reason of their Cavities, thro' which filtrates a Humour which would render the Wound incurable. Fourthly, To the *Temples*, as well by reason of the Temporal Muscle, as because the Bones there joining like Scales, the piece of Bone which we are to raise up would separate in two. Fifthly, To the *declining* or *inferior parts of the Head*, because the Brain in its continual Motion would force the *Dura-Mater* out. Sixthly, To *great Bruises*, for the Bones being loose, we cannot set the Trepan upon it without sinking them on the *Dura-Mater*. These Precautions are just, and founded on Reason, but are not to be rigorously observ'd; when the Patient is in danger, the Chirurgeon is to pursue his Course, and rather run the risque of the inconveniencies attending these Places, than to suffer the Patient to be lost; but he ought yet to keep as distant from them, as the figure and situation of the Wound will permit. The Chirurgeon is to chuse the best in these Cases; but not to be so inhuman as to see his Patient perish for want of the Trepan, which has cur'd an infinite number, who have been thought in a desperate Condition.

In several Operations there are two times, one of Choice, and the other of Necessity; but in this last we are ignorant of the time of Election, at least, if it is not to hasten or defer it some Hours: There is only that of Necessity which determines us, and that is always pressing, as well by the present Symptoms, as those which may every moment supervene, and which ought to be prevented; wherefore we are to pitch on the surest way, which is to hasten the Trepan.

The *Exfoliative Trepan* ought not to be used; I don't know who could have invented it; but that way of piercing the Bone

by scraping it, and raising several leaves one after another, must very much shock the Head, and do more Mischief than good. It has in its middle a point which serves to fix it, but which may wound the *Dura Mater*, because we have not the liberty of taking it out as we do the Needle in common Trepanns. I am not the first which has condemn'd their use; but since we have suppress'd this Instrument, and you don't see it amongst the Trepanns lately made, I present you with it in the XXXIst Plate, that you may be more fully convinc'd of its Defect.

Of the ordinary Trepanns.

In the Trepanns there are three Crowns, the one little, the other midling *a*, and the other larger, the Question is, which of these three is to be us'd, and what quantity of Bone is to be taken out. Authors answer, that generally the least is to be preferr'd, because the Brain ought to be as little uncover'd as possible, and a great Aperture is most difficult to cure; but there are Cases in which the great Crown's most proper: For Instance, in two Scissures, when we can take both of them in at once, 'tis better to make use of it, than to be oblig'd to perform two Trepannings with the little one.

We have observed six places to which the application of the Trepan is forbidden, let's now take a view of those on which it ought to be us'd; which, generally speaking, are always the places where the Blow was given, but in particular there are Circumstances which give us reason to set it distant from them, which we are to observe before we proceed to Operation.

Circumstances to be observ'd for the application of the Trepan.

First, When the Wound is in the upper parts of the Head, we are to Trepan the lowest part of the Wound to facilitate the running off of the Blood and Matter; and when the Wound is in the inferior parts, we must apply the Trepan to the highest place, in order to keep at a distance from the Basis of the Brain.

Secondly, If the Wound be a Crack, we are not to fix the Trepan either in the middle of, or far distant from it, but the Teeth of the Crown are to be placed on it, that the Bone being forced to exfoliate, the Splinters may the more easily separate.

Thirdly, In a great Contusion which the *Levitor* and *Triplid Levitor* cannot raise up, we apply the Trepan to the middle of the sinking, that thrusting the Levitors into the Hole which that will have made, we may endeavour to restore it to its due level.

Fourthly, Tho' the Contusion be but light without Scissure, and tho' it seem a bare dent, like that made by the Blow of a Hammer on Wood, it ought yet to be Trepann'd, because the Fibres of the Bones are there disunited; in which case the Trepanning is to be perform'd on the bruise'd place.

Fifthly, When the Wound is an *Ecpiesma*, that is, a Bruise attended with several Splinters, which press on and fatigue the

int-

interior Membranes, the Trepan is to be placed on the next Bone, which ought to be stable and firm, in order to sustain the little Efforts made in piercing it, and to facilitate the raising of the separated Splinters, by resting on them the Instruments prepared for that end.

Sixthly, For an *Engizoma*, or a piece of Bone like a Draw-Bridge, and for a *Camarosis*, or the middle of the fractured Bone, resembling the back of a Tortoise, it ought to be trepann'd on the adjoining part, in order afterwards to re-place the Bones, so as they may not be able any way to incommode the *Dura-Mater*.

All things well consider'd, and the Operation resolv'd on, the Chirurgeon is to employ his Attention on all those things which are to be gotten ready before Trepanning, on those which are to be observ'd during that Operation, and on the measures which he is to take after it.

Before Trepanning, the Patient (if possible) is to be placed *Proper* in a back Chamber far from the Street, in a quiet Place free *place for* from all Noise, and where the sound of Bells may not reach *the wound-* his Ears. The Door must be hung with some sort of hanging *ed Patients*, on the inside, and the Window provided with double Shutters, to prevent the entrance of the cold Air and Winds: 'Tis proper that the Chamber should be indifferent large, that it may retain a moderate portion of Air. The Chirurgeon then dis- *The Appa-* poses his *Apparatus*, which consists in the first place in the In- *ratus.* struments requisite to the performance of the Operation. Secondly, in the Necessaries requir'd to the dressing the Patient after that is over: Wherefore he is to prepare two Basins, in the first of which he is to dispose the Instruments which you will see in the XXXIst Plate, and in the second he is to place whatever is necessary to the Dressing, and which I shall shew you in the XXXIId Plate.

FIGURE XXXI. *The APPARATUS for TREPANNING.*

*Situation
of the Pa-
tient.*

THE Instruments are to be prepar'd in an adjoining Chamber, and rang'd in order in a broad Dish or Basin, cover'd with a folded Napkin, after which it must be cover'd with another Napkin before 'tis brought into the Patient's Chamber, that he may not be affrighted at the Sight of them. The Patient is to be situated in a convenient posture, that is, his Head so turn'd, that the Wound is uppermost and high, in order to sustain the Trepan perpendicularly plac'd on it. The Bed is to be remov'd into the Chamber, that a Seryant may lye

lye at the Beds head, in order to hold the Patient's Head the firmer; and if the Operator judges that place more commodious for him, he places himself there; the Patient's Head is to be laid on a Pillow, under which is thrust a small Board to hinder its sinking during the Operation. The Chirurgeon *Preparation for the* then causes his Hair to be ty'd behind him, that it may not fall a-cross his Eyes when he stoops; and if he has a Peruque, *Operation.* he takes it off, and puts on a little Cap, which will not at all hinder him: And whilst some Attendant holds Fire in a Chafing-Dish B, in the middle of the Bed, he must cause to be lighted the two small Wax Lights A, join'd and twisted together, that they may not give two separate Lights; these twisting Wax Lights are better than others, because they easily bend, and may be drawn near to, or kept at a distance from the Operator, as may be found necessary. We next lay open the Wound, which we cleanse with the false Linten Tent C, to render the Operation less painful; the Ears of the Patient are stopp'd with the two little Balls DD of Cotton or Lint. I believe, that the Noise which rises in the Ears when they are stopp'd, hinders the hearing the small Noise which the Crown of the Trepan makes in sawing the Skull; but I have seen this Ceremony forgotten, and the Patient never the worse. If the Lips of the Wound are not sufficiently rais'd, and are in danger of touching the Teeth of the Crown, we must, with the four small Bands EEEE thrust under them, and whose ends we cause to be held by the Apprentice who holds the Head, or some other Youth, separate them from one another; but if the Wound is sufficiently dilated, and so wide that the Lips don't touch the Instrument, we are without loss of time to prepare for the Operation.

Of the Dilation of the Wound.

In Trepanning there are yet some Circumstances, the Observation of which is more essential than those which I have just now hinted. The Chirurgeon must begin with the choice of the Crown which he intends to use; wherefore I shew you three of different sizes, the one larger F, the middling one G, and the little one H, and being determin'd by the nature and figure of the Wound it self, he pitches on that which is most convenient: He presents it to the place to which he is resolv'd to apply it, remembering that it must not touch the Lips of the Wound of the *Pericranium*, which would give the Patient a most sensible Pain in the Operation; and then he turns the Crown once or twice round, to mark the Circumference which is to bound the Trepan, and to discover the middle. He next takes the Gimlet I, on which he mounts the Piercer K, which he fixes on the place traced out by the point of the Pyramid which was in the Crown, and turning it five or six Rounds, he makes a small Orifice of the depth of a half Line, or the four and twentieth part of an Inch, which serves to lodge the point of his Pyramid, and so to conduct the Crown, that it shall not

Choice of the Crown of the Trepan.

Use of the Gimlet and Piercer.

waver

waver either on one side, or the other. The Piercer being taken out of the Gimlet, the Chirurgion fixes in its stead the Crown G, which he is to use, and places it on the mark'd Place; and then with his Left-hand holding the Top or Ball of the Gimlet, upon which he leans his Forehead, he turns the Instrument with his right Hand against the Grain of the Teeth of the Saw, that they may cut. He turns it at first gently, 'till the Crown has a little penetrated the Bone, in order to mend its Pace at the beginning, in which there is no Danger. We cannot prescribe how hard the Operator is to lean his Head, he is to determine that himself; for if he leans too hard, he will scarce be able to turn the Instrument; and if he does not press it enough, he will not penetrate: He must turn it equally, and not by fits and shocks, and when he believes he has proceeded about the twelfth part of an Inch, he raises the Crown, and takes away the Pyramid L, with the Instrument M, because it then becomes useless, the Perforation being sufficient to guide the Instrument without the Pyramid, which may also happen (not without great Danger) to prick the *Dura-Mater*, if we forget to take it out. The

What to be done when we come to the Diploe.

Use of the Quill. Of the Levitor and Piercer.

Extraction of the extravasated Blood.

Pyramid then thus removed, the Crown is to be put into the Hole which it has made, and we keep turning of it 'till we come to the *Diploe*, which we discern by the reddish Saw-dust, and the Blood which very frequently proceeds from it. We then next withdraw the Crown, to clear it of the Saw-dust and Blood with the little Brush N; and before we fix it on again, we make use of the Piercer O, to prepare a Place for it in the Hole made by the Pyramid, in order, by its Means, to raise up the piece of Bone; after it is perforated as deep as is necessary. Having drawn out the Levitor, we again apply the Crown, but don't turn quite so fast, because the second Table is sometimes thinner than the first: We several times draw out the Crown, in order to clean it. We probe the Circuit made by the Crown with the Quill P, cut like a Tooth-picker, to discover whether the depth is equal, in order to lean the harder on that side of the Bone which is least cut: In fine, he continues to raise up, and clean the Crown, and shakes or moves the piece with the Levitor Q, or with the Borer, and to probe the Perforation as often as he thinks fit, 'till the Skull is intirely pierced through. When the piece of Bone is loosen'd, we may raise it with the Myrtle-leav'd Knife R; and if there remain any little Roughness at the bottom of the circular Hole, which may prick the *Dura-Mater*, and incommode it in its Motions, we cut them off with the Lenticular Penknife S, which we turn about the Circuit, the Lenticil at the end of it preventing its hurting the Membranes: During this time, we discern the Blood to foul and fill the Hole, issuing out by Means of the Pulsations of the Brain and *Dura-Mater*. We usually close the Nose of the wounded Patient, to make

make him hold his Breath; and with the Lenticular Instrument T, to repulse the *Dura-Mater* against the Brain, in order to the issuing out of the Blood. But if that Humour comes out of it self, as it frequently happens, the Patient is to be spared the enduring of these small Efforts, and we are not to make any Compression with the Lenticular, taking care, before we proceed to the dressing, with the false Tent V to absorb the Effusion of Blood.

'Twould be a Fault in the Operation to bring off a piece of the Bone in the Cavity of the Crown when we withdraw it, since we might then suspect that, having turn'd the Instrument more than we ought, its Teeth had hurt the *Dura-Mater*, tho' this Misfortune is what very rarely happens, unless it is foolishly and carelessly turn'd; for the Crown being shaped like a Pyramid, whose Point is turn'd from without inwards, it cannot fall upon the *Dura-Mater* as soon as the Skull is cut, without being stopped at its largest place: But tho' the Fault of which we have been speaking is a very slight one, we are yet to avoid falling into it, in order to escape the Censure of the Spectators. The first Table of the Bone may be raised before the second is cut, but tho' this is not the Operator's Fault, he is yet tacitly blam'd for it by those who see it; wherefore he is to do his best to avoid all Reproach, since a Chirurgeon never performs a considerable Operation without severe Censurers, which never forgive him any Fault. He is not to perform this precipitately, for fear of hurting the Brain and the Membranes; nor ought he to be so slow, as to tire and render impatient, both the wounded Person and the Spectators; he ought to keep to the middle way, which depends on the Conduct and Dexterity of the Chirurgeon.

A Fault to be fear'd.

When there is a great Contusion, and several Cracks, we are to trepan twice, thrice, or four times, and more, if Necessity require it. A young Maiden of about eleven or twelve, by a Fall from a Ladder, in 1705, bruised one of the *Parietal* Bones wholly, and one of the Temporals. Monsieur *Mareschal*, on the next Day, trepan'd her in two places, caused his Son to do it in a third, and my Son who was present in a fourth. The next Day he applied two more, and afterwards so often, as to make the whole number amount to twelve, and the Girl was very well cur'd. She is the Daughter of Mr. *le Vasseur*, at the Office of the Treasurer of War at *Versailles*. This so famous Instance shews, that we are not to be surpris'd at the Multitude of *Trepans*.

FIGURE XXXII. For the Dressing of the PA-
TIENT after TREPANNING.



Of the OR-
DER and **A**FTER trepanning, we don't wait 'till all the extravasated
MATTER of every Moment thro' the Orifice: We then clean out that which
DRESSING. is in the hole of the Trepan, with the false Tents A A; and
if we think there remains any small Point about that Hole,
which may prick the *Dura-Mater*, we are to cut it off with
the Lenticular Penknife B, after which we prepare to dress the
Patient.

Patient. The first thing which we do, is to pour on the *Dura-Mater* some Drops of white Balsam contained in the Viol C; we warm the Spoon D, in which is some *Mel-Rosat*, to mix with a little of this white Balsam; in which Mixture we dip the two *Sindons*, of which one is of Linnen, E, and the other of Lint, F; we lay the first on the *Dura-Mater*, and being larger than the hole in the *Cranium*, we thrust all its Circumference in betwixt the Skull and the Membrane, by Means of the Lenticular G; we thrust in the second after it, and proceed wholly to fill up the Hole with a Linten Stopple H. We then cover it with the Pledget I, after having dabb'd the part of the Skull which is uncover'd with Spirit of Wine, and with the Forceps K, the four small Stopples L L L L, which we wet in the Digestive M, in order to place them one after another on the Wound, the middle of which is filled with two other small Stopples N N, dipped in the same Digestive; and having cover'd with the same Digestive, by the *Spatula* O, the two large Pledgets P P, we lay them over all the rest, making an *Embrocation* of Oil of Roses contained on the Plate Q, which must be held to the Fire to warm that Liquor before we rub it all over the Wound: Then we lay on the Betony Plaister R, which we cover with the Bolster S, and that with the Napkin T, over it: Then we proceed to make the Bandage call'd the *Coverchief*, which I have already taught you. I add to all this *Apparatus* the Woollen Cap V, which I put over the Bandage; for the Linnen being put twice double on the Head, that part is not sufficiently defended from the Cold, considering, that being shorn, 'tis the more sensible; wherefore this Cap is necessary to keep the Part warm. Next, we place it in a proper Posture; the best for the Patient is to lye on the Wound, in order, by that Declination, to help the Brain to thrust out whatever incommodes it.

When the Patient is intirely dress'd, we advise him to keep himself very still, and even to avoid speaking, and return again to bleed him two or three hours after the Operation: His Nourishment must be very small Broths, to be taken every four hours, drinking in the intermediate Intervals as much Ptisan as he pleases. The next Day before the taking off the *Apparatus*, we shut the Curtains of the Bed, in which we set a Chafing-dish or Warming-pan, with lighted Charcoal, or Wood-coal, which cannot offend the Head, as well to purifie the Air which must touch the *Dura-Mater*, as to warm the Ingredients and Linnens necessary to the dressing: The Brain is never to be left uncover'd; to which end we have always a fresh *Sindon* ready to clap on before we take off that which is there, not spending much time in drying the Lips of the Wound, but covering them quickly, for the sooner that is done, always the better, and the Patient spar'd the suffering of some Pain.

The whole Conduct of the Cure cannot be particularis'd, the Chirurgeon must know his Subject, and treat it according to the dispositions in which he finds it, but must not relax the Rules of Diet which are to be very strict. If we give the Patients but a little Liberty, they always take too much; Hunger being a good sign, they ought to be long detain'd in that Condition. *Oleaginous* and corrupting Remedies are of no use in Wounds of the Head; but Balsamic and Spirituous ones are very good; for which reason we are to make use of the white Balsam, or Spirit of Wine, the Digestive must be forcible, but must not be long used. The Bolsters are to be dipt in Wine in which have been decocted all sorts of Aromatics, except Roses, whose scent may offend. If the *Dura-Mater* continues within its Bounds, we continue the same Dressing: But if it pushes into the hole of the Trepan, we endeavour to prevent its entrance, by stopping it with small Stopples. Sometimes there

Of the Cure
of the Mush-
rooms.

grows a sort of *Fungus*, shap'd like Mushrooms, on the *Dura-Mater*: When they are large, we are to cut them, we tie them at the bottom, that they may dry and fall off: If they are small, we must consume them with Powders of Savin, Ocre, and burnt *Hermadaeyl*. The Flesh of the Lips of the Wound sometimes grow so large as to cover the Orifice made by the Trepan, in which case we keep them under with Pledgets wetted in Brandy, or vulnerary Water: What remains is, that we avoid Unguents, and use no other than desiccative Remedies during the time of the Exfoliation.

Of Exfoli-
ation.

The Bones exfoliate sometimes sooner, and at others later, which depends on the Age, size of the Fracture, and the hardness of the Bone; but it commonly happens betwixt the 40th and 50th Day. The use of Cephalic Powders has no influence with regard to the hastening the Exfoliation, which being a pure work of Nature must be waited for with patience, for fear of interrupting her in her Measures, which she alone knows how to take to attain that end: The whole Circuit of the Hole made by the Crown, and whatever is uncover'd of the Surface of the Skull, undergoes an Exfoliation, which falls off sometimes in one whole Splinter like a Ring, and frequently in several, which loosen as the Flesh which grows under them thrusts them out. We must not too impatiently snatch away the Splinter even when loose, for that does not at all expedite the Cure, but may happen to delay it. When the Exfoliation as well of the *Cranium* as the *Dura Mater* (for that Exfoliates or Peels as well as other Membranes) is wholly over, there comes out a

Growing of
fresh Flesh.

Flesh, which joining with that which proceeds from the Skull, and that of the Lips of the Wound, forms out of three sorts of new Flesh a sort of *Callus* or Hardness, which stopping the hole of the Trepan, replaces the Bone which we took out: Over all this we procure a good *Cicatrix* or Scar, which is the Seal of the Cure.

The Etymology of the *Hydrocephalum* proceeds from *Hydros* The Opera-
Water, and *Cephale* which signifies a Head; so that 'tis a sort tion for the
of Dropsie, with which the Head is so full of Water that 'tis HYDRO-
perfectly inundated. CEPHALE.

There are general and particular Dropsies: We have treated
on the first in our Discourse of the *Paracentesis*; as for the
others, they derive their Name from the Places where they
fix; as we call the Dropsie in the *Scrotum*, the *Hydrocele*, so
that of the Head is call'd *Hydrocephale*. Both of them proceed
from the same Source, and only differ in their Situation; for
they are always produc'd by the Relaxations of the Glands and
lymphatic Vessels, or an excessive abundance of Serosities in the
Humours.

Authors distinguish two sorts of *Hydrocephale*, viz. External. Two Species
when Water is without the Brain; or Internal, when under of Hydro-
that bony Helmet. Of the first there are also two sorts, the cepha-
Water is either betwixt the Teguments and the *Pericranium*,
or betwixt the *Pericranium* and the *Cranium*: And Writers
make three sorts of the Internal ones, the first is when the Wa-
ter is contain'd betwixt the *Cranium* and *Dura-Mater*; the
second, when 'tis betwixt that Membrane and the *Pia-Mater*;
and the third, when it is in the Ventracles and proper Substance
of the Brain.

These Diseases, which are peculiar to Children, may, like all Causes of
other Dropsies, proceed from internal Causes; they may also these Dis-
be owing to external ones, as a harsh Delivery, in which the eases.
Child's Head has been too hard pressed, and lengthen'd in order
to get it out; or else, if after the Delivery the Midwife, pre-
tending to shew her Ability, attempts to new mould the Head
of the new-born Infant, which should never be done, because
the Brain of it self sufficiently reassumes its natural Figure, and
its glandulous Substance is so soft, that a little Violence is enough
to break their Contexture.

The external *Hydrocephale* is easily known by the Swelling Signs.
and Inflation of the whole Head, by the softness of the Tu-
mour, which yields to the Finger when touch'd: But the In-
ternal is more difficult to discern; we determine concerning
it by pressing on the Sutures which yield, and which are wide
distant from each other; 'tis also known by the weeping, by
the heaviness of the Head, and by drowfiness.

The Chirurgeon may undertake the external *Hydrocephale's*, Prognostic.
I have seen several cur'd of them betwixt the hairy Scalp and
the *Pericranium*, for I have never observ'd those betwixt the
Pericranium and the Skull, nor can I comprehend how they can
possibly be there and be cured, since the Skull must be intirely
separated from its immediate *involucrum*: But he may assure
himself that all the Internal are incurable and mortal, without
scarce ever finding himself mistaken.

Practice of the Ancients in the Application of Cauteries, and other external Remedies. All the Species of *Hydrochale* require the Chirurgeon's hand, to give issue to the Water which is the Disease. The Ancients applied two potential Cauteries, one to the beginning of the *Sagittalis Sutura*, or shaft Suture, and the other on the *Lambdaide Suture*: The Scars being fallen, they let out the *Lympha* at two Orifices, and when they believ'd that there were two parcels of Water under the *Pericranium*, they open'd these two places which might serve as a drain: They made use of Cephalics externally, making Embrocations of Oil of Camomile, Melilot and Dill, by which means they pretended to cure these Diseases.

Observations.

I am rather for the Scarifications of the declining part of the Head, through which the Waters that have soak'd in there may drain off, and come away by little and little, better than by Cauteries too near the superior Parts of the Head. Three Years since a Child brought into the World with it an *Hydrocephale*; two longitudinal Incisions were made at the posterior and inferior Part of the Head, thro' which all the Water distill'd by drops: I advis'd the making them in that place, because that the Child being lain down the Waters had liberty to run off, I caus'd the Nurse to apply to the Child's Head a good Bolster dip'd in warm Wine, which was frequently renew'd, and the Patient was cured so that he is very well.

When the *Hydrocephale* is internal, that is, when the Water is under the Skull, there is no other way of drawing it out than by the Trepan, which is apply'd in the same manner which I have describ'd to you. If the Waters are only betwixt the Skull and the *Dura-Mater*, and there is none under that Membrane, a Cure is to be hoped for; but 'tis very rare that they gather under the Skull, and don't disperse into the Ventricles and smallest resorts of the Brain, which must be wholly inundated, which appears by the Symptoms which accompany these Diseases, which are what has made me advance that all internal *Hydrocephales* are incurable and desperate.

Of the Operations of the EYES in general.

Of all the Parts of the Body, the Eyes are afflicted with the most various and different Diseases. The number is so large, that it exceeds an Hundred. The Greeks have bestow'd on every one of them a particular Name, which distinguishes them from the rest. Of this multitude there are but few which require the Chirurgeon's Labour; and 'tis with those that I am going to entertain you, and demonstrate the Operations proper to them.

In the Eye we consider principally four Parts, which are, the *Eye-lids*, the *Eye-lashes* or Hair at the edges of the Lids, the *Tunics*, and the *Angles*, each of which requires its respective proper Operations.

The *Eye-lids* are particularly subject to six sorts of Distempers, which are called as follows, *viz.* First, the *Ancyloblepharon*, in which the *Eye-lids* are glued or stuck to one another.

ther. Secondly, the *Lagophthalmos*, which is a withdrawing or shrinking back of the upper Eye-lid. Thirdly, an *Ectropion*, or Relaxation of the lower Eye-lid. Fourthly, the *Criche*, which is a small Tumour at the edge of the Eye-lid. Fifthly, the *Chalazian*, a Mass or gathering of Humours resembling an Hail-stone. Sixthly, the *Hydatis*, that is, an Excrecence on the Eye-lids.

The Eye-lashes are afflicted with three Diseases which are proper to them, and are compounded under the word *Trichiasis*; viz. First, the *Distichiasis*, which is a double Rank of Eye-lashes. Secondly, the *Phalangosis*, when the Lashes turn inwards towards the Eye. Thirdly, *Ptoſis*, or rather *Ptilosis*, is, when by reason of the Relaxation of the Eye-lids, the Hair falls into the Eye.

The *Tunica* are afflicted with four Maladies, which are, First, the *Hypopyon*, or a gathering of *Pus* behind the *Cornea Tunica*. Secondly, the *Pterygion*, which is a membranous Excrecence in the Eye. Thirdly, the *Proptosis*, or falling of the *Uvea*. Fourthly, the *Hypochyma*, otherwise called the *Cataract*.

The Angles are liable to, first, the *Eccantis*, which is a carneous Excrecence at the Corner of the Eye. Secondly, the *Anchylops*, or Abscess of the great Angle of the Eye: And thirdly, the *Ægilops*, or *Lachrymal Fistula*. All these Indispositions amount to sixteen, and require as many Operations, on which are bestow'd the Names of the Diseases to which they answer: We shall now proceed to examine them one after another.

FIGURE XXXIII. APPARATUS for the
EYE-LIDS.

Of the Operations on the EYE-LIDS. **O**F the six Operations to be perform'd on the Eye-lids, the first is the *Ancyloblepharon*, which word is derived from *Ancyli*, which signifies a Hook, and *Blepharon*, an Eye-lid; 'tis term'd in Latin *Inviscatio*, and in English *Agglutination*, and is a Distemper in which the Eye-lids are stuck and glued together, which hinders the opening of the Eye. This Accident may come into the World with a Person, since we see Children born with other Orifices stopp'd; but it most frequently happens after a Fluxion, and after the Small-Pox: When the Patient has long continu'd without opening his Eyes, the ulcerated Eye-lids agglutinate and cicatrize together. Every Body knows that the Eye-lids must be separated; but 'tis the Chirurgion's Task to discover the means to attain that end. If the Agglutination is imperfect, and there remains yet a small Aperture at one of the Corners, with the Instrument A, shap'd like a crooked Incision-Knife, provided with a Button at its point, introduc'd into the mention'd Orifice, he at several times

Of the An-
cyloble-
pharon.
Its Causes.

Manner of
curing it.

times cuts afunder these conglutinated Parts, withdrawing that Instrument in order fucceffively to divide the two Eye-lids from one Corner to the other. If after this Separation either of them be join'd to either the *Adnata* or *Cornea*, he is to fepa-
rate them, 'till which is done the Operation cannot be faid to be finish'd: The Chirurgeon acquits himfelf in this cafe by drawing the Eye-lid towards him with the fmall Instrument B, fhaped like a *Spatula*, endeavouring to loofen the Eye-lid from the Body of Eye. But if it fticks too faft, he cuts with the Penkife C what made the Agglutination, being very careful that he does not cut either the *Tunica Cornea* or *Adnata*, but rather cutting the internal Membrane of the Eye-lid: Next we thruft between the Eye-lid and the Eye, the two fmall thin bits of Linnen DD, dip'd in fome deficcative Liquor, to prevent their joining again; which Practice is be continued 'till the Cure is perfectly perform'd.

The fecond is the *Lagophthalmos*, derived from *Lagos*, a Hare, and *Ophthalmos* an Eye, in Latin called *Oculus Leporis*, that is, *Hares Eye*; 'tis a Diftemper in which the upper Eye-lid is fo drawn back, that being too much contracted to be able to cover the Eye, it is forced to remain open whilft the Patient fleeps, as do the Eyes of Hares.

This Indifpofition may naturally proceed from the firft For- *Whence*
mation, or afterwards by accident of a Wound, an Ulcer, or a *this Difcfe*
Burning; or fometimes by the depravation of the Motion of the Mufcles of the Eye-lids: So when a Convulfion happens to feize the *Mufculi recti*, and the Palfie the Oblique, the Eye muft neceffarily continue open, thefe Mufcles being deficient in the Exercife of their Functions. This Diftemper is cured by *Pharmacy*, that is, by the external Application of Remedies to the Part, mollifying or relaxing whatever keeps it out of its *Reddy* Custom, or fortifying and corroborating it, according as the Difcfe is, whether Convulfive or Paralytic. But if thefe Remedies prove vain and unfucceffful, and the Eye-lid is contracted by a Cicatrife, we have recourfe to the manual Part of Chirurgery, which we begin with placing the Patient in fuch a Pofture as expofes the Part to the Light. The found or well Eye is cover'd with the Band E, and the Eye affected we fubject to our direktion by the *Speculum Oculi* F, if practicable, or elfe hold it betwixt the Thumb and Forefinger of the Left-hand, keeping the Eye-lid very much drawn downwards; then with the Incifion-Kife G we make on that Eye-lid an Incifion in the form of a Crescent, according the direktion of the Fibres of the *Occlufory Mufcle*, the points of the faid Crescent turning downwards, and approaching the corners of the Eye. This Incifion made, we feparate the Lips of the Orifice as wide as poffible, and provide them with Pledgets fhap'd like Olive Stones; and contrary to all other Wounds, whofe Lips we endeavour to draw together in order to procure their Cicatrifing; in this

case we separate them, in order to procure the growing of Flesh betwixt them, to extend the Eye-lid. When the contraction of this part is so great, that one Incision is not enough, we are to make two, each of them of the same Figure, and of the thickness of a Crown-piece, and by that means restore the Eye-lid to its original use, and make it fall over the Eye, which before that cannot close.

Derivation of the Word The third is the *Ectropion*, deriv'd from *Ec*, which signifies without, and *Steptin*, to turn, in *Latin Relaxatio*, in *English Ectropion*. *Relaxation or turning downwards*. 'Tis a Disease of the lower

Three Causes of it.

or under Eye-lid, which relaxes, and so turns outwards, and sinks downwards, that it cannot possibly cover the Eye. Authors assign three several Causes of this Indisposition: The first is the *Palsy*, or Relaxation, as well of the Eye-lid, as the Occlusory Muscle: The Second consists in a *Superfluous Flesh*, which insensibly grew on the inside of the Eye-lid; and the third may be some *Burning*, a *Scar*, or a *Cut* on the out-side. The Method of Cure differs pursuant to the diversity of the three Causes. If the Eye-lid is relax'd by reason of too great Humidity, the Chirurgion is to apply Desiccatives; if it is too feeble, we are to fortifie it, and in case of a Palsie we use Corroboratives, in order to restore its Tension. Secondly, if a Carneous Excrescence, it must be taken off whilst young and small, and we may consume it by Caustics; but if old and hard, we eradicate it, either by Ligature, if its Basis be very small, with the Thread H, passed thro' the crooked Needle I, which is to be run thro' the Excrescence, to prevent the slipping of the Ligature; or by Incision, if it cannot be done otherwise, after which we apply *Collyria*, or Astringent Powders, to cicatrise the cut places. Thirdly, If a Burn, or Scar, draws down and detains the Eye-lid, we make an Incision on it with the Incision Knife G, of the Figure of a Crescent, the same I have shew'd you on the upper Eye-lid: With this Difference only, that the points of the Crescent in the upper Eye-lid being inclin'd downwards, in this they are to be turn'd upwards.

Of the Wart call'd Crithe or Hordeolum.

The fourth is the *Crithe*, which Word is deriv'd from *Crite*, a *Barley-Corr.* in *Latin Hordeolum*. 'Tis a narrow, longish, fix'd and settled Tumour, shap'd like a Barly-corn, which grows on the edges of the Eye-lids amongst the Hairs. The Matter which supplies these small Tumours is contain'd in a little Bladder, and does not without difficulty, ripen and suppurate; 'Tis call'd in *French* an *Orgueilleux*, and vulgarly an *Orgeolet* by the good Wives, who sometimes wish it may fall on those who refuse a big-bellied Woman her Longing. To Cure it we are to bring it to Suppuration: The Pap of roasted Apples applied by way of Cataplasme is excellent, in order to ripen it; and when we find it white, and the Matter digested, with the point of the Lancet

K, we make a small Orifice according to the length of the Tumour, then betwixt our two Nails squeeze out the Pus and the Bladder together; which done, it heals of it self without the application of any Remedy.

The fifth is the *Chalazion*, the *Periosis*, or *Lithiasis*, in Latin Of the call'd *Lapis Palpebrae*, and in French *Grain de Grêle*, or a *Hail-Chalazion*. Stone. They are small Pushes, Pimples or Tubercules like Hail-Stones. They come as well on the upper as lower Eye-lid, and are moveable, for when press'd they change their place; in which particular they differ from the Barly-Corn, which is always fix'd and settled. The cause of these two Species of Tubercules is an induration of the Humours which gather and settle betwixt the Membranes of the Eye-lids, so that they don't really any otherwise differ from one another, than in the Matter which composes them, being more or less hard or dry. To cure them, we are not to wait for either Resolution or Suppuration, nothing can do it but Operation, which is perform'd in the same manner on the one, as well as the other. On these Stony Callosities we make one after another small longitudinal Incisions with the Lancet K, to lay them open, then with a Crotchet we lay hold on the Callosity, in order to dissect and separate it with the Instrument M, shap'd like an edge Myrtle-leav'd Knife, without taking away any of the Membrane of the Eye-lid: Over these small Orifices we lay the sticking Plaister N, to close the Apertures, then a Bolster, and on that the Band E, which secures the whole Apparatus. Some Authors would have us, if these Hail-Stones appear more within than without the Eye-lid, to make our Incisions within, to draw them thence; if this could easily be done, I should advise it, but in order to its performance, we must of necessity turn the inside of the Eye-lid outwards, which is more inconvenient than to operate on the outside.

Differences of Tubercules.

Of the Operation.

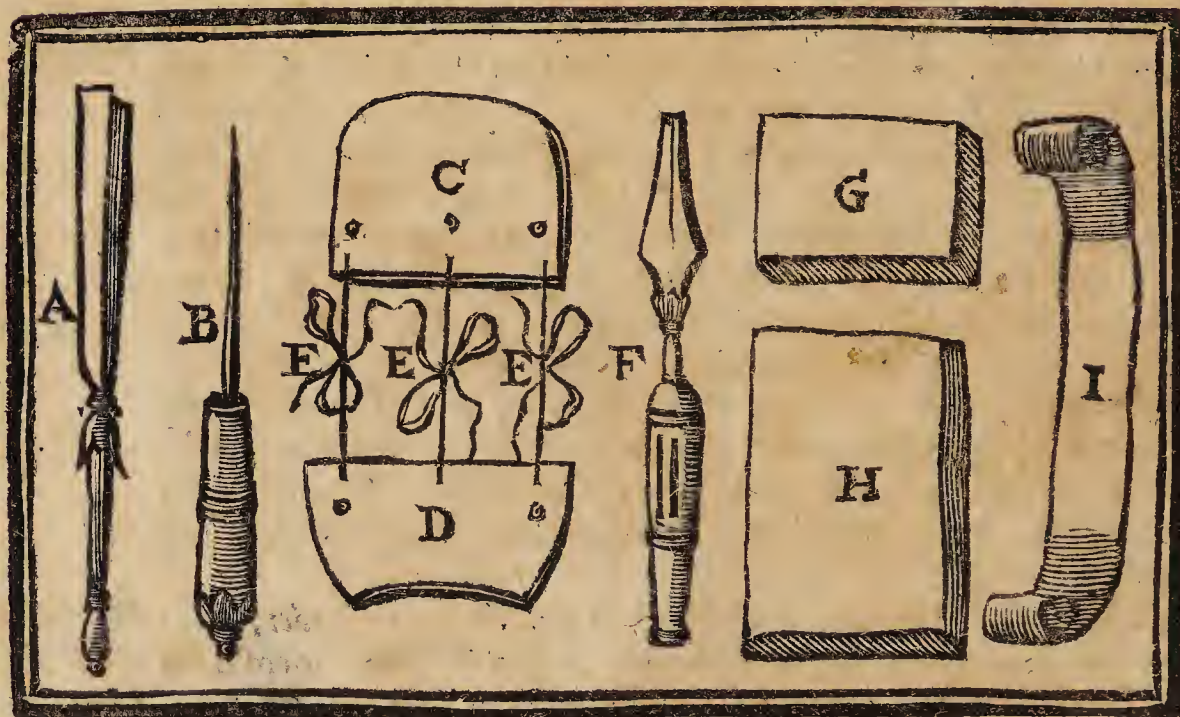
Advice.

The sixth is the *Hydatis*, which is deriv'd from *Hydor*, Water, and is call'd in Latin *Aquula*. It is a Tumour form'd on the upper Eye-lid, from Fat, or some such like Matter comprehended in a particular Bladder: This Tumour appears more when the Eye is shut, than when open: 'Tis round and flat, and very near of the same Nature with that sort of Cancrous Tumours which we call Wolves, and proceeding from the same Causes, we ought not to hunt after any other, these being also cur'd the same way as they are. The Salve *Diabotantum*, with which Wolves are dissolv'd, is a Sovereign Remedy in case of the *Hydatis*: I have made use of, and cur'd several with it, obliging the Patients to wear for a very long time the little Plaister P, spread on black Taffety, and shap'd like a Crescent, which method has succeeded very well. But, if the Matter, instead of dissolving, grows harder, and the Tumour increases, we

Of the Tumour Hydatis.

must then proceed to Operation, which consists in taking it out with its Bladder, as tho' it were a Wolf. We keep the Eye-lid shut, either with the *Speculum Oculi* F, or with the Fingers, and make an Incision on the Skin with the Knife C, according to the streightness of the Fibres, being very careful to avoid the opening of the *Involucrum*, or Purse, which contains the Matter, that the drawing it out all at once may not thereby be prevented, that being otherwise easily done; for the Tumour being uncover'd, if never so little press'd on the sides, turns outwards, and with a Worm we force it out whole; which done, the Wound is to be treated as we do those of Wolves.

FIGURE XXXIV. For the EYELASHES,
or HAIRY EDGES of the EYE-
LIDS.



Of the
Trichiasis.

Under the Name of *Trichiasis*, which is deriv'd from *Trix*, which signifies Hair, are compris'd the Diseases of the Eye-lashes, and the Operations to be perform'd on them, and they are of three sorts.

Of the
Distichiasis.

The first is the *Distichiasis*, from *dis*, two, and *stix* order. 'Tis a Disease of the Eye-lids, in which, under the ordinary Eye-lashes, there grows another extraordinary row of Hair, which frequently eradicates the former, and pricking the Membrane of the Eye, excites Pain, and draws on a Fluxion.

The Operation pra-
ctis'd on it

To remedy this inconvenience, no other Operation is necessary than the pulling out the Supernumerary Hairs, with the small Pin.

Pincers A, not unlike those used to pluck Hairs out of the Beard; and the whole Secret consists in preventing their returning. Some tell us, that if we rub the Place with Frogs Blood, a bit of Veal, or Ants Eggs, the Hair will never grow again: These means are easily try'd; but the most certain one is, after having pulled out every one of these superfluous Hairs, to cauterise with a hot Needle B the Place where each of them was pluck'd out, and continue on, 'till we have sear'd all the Pores out at which the Hairs grew. This Operation requires as great a Share of Address in the Chirurgeon, as Patience in the Patient.

The second is the *Phalangesis*, from *Phalanx*, which signifies a Rank of Soldiers, by reason that in this Disease the Hairs are erected and pointed towards the Eye, as the Arms of a Company of Soldiers are against the Enemy. It proceeds from two Causes; which are, either the excessive Relaxation of the Skin of the upper Eye-lid, or the Contraction of the Membrane of the same Eye-lid, which drawing inwards, its *Tarsus*, or *Cartilaginous* Extremity, forces the Hairs to turn their Points against the Eye, instead of inclining them outwards: The Chirurgeon is to examine which of the two Membranes occasions it. If he finds the external one to be relaxed by Humidity, he applies such Remedies as will dry and strengthen it; and in the mean while, as in case of dry Sutures, he here fixes two little bits of Leather C D, charged with an Emplastick Unguent, one on the Eye-lid, and the other on the Forehead above the Eye-brows; and by means of the small Threads E E E, fastened to these Plaisters, he ties them together, so that being drawn moderately close, they keep the Eye-lid in its natural Posture. If the Fault be in the internal Membrane being too much drawn inwards, after we have with one Hand turn'd the Eye-lid outwards, we are, with the Knife F, to make a small Incision longways, in order to unbridle it, and give it leave to extend it self; by which Means the Eye-lashes will re-assume their natural Position, and the Eye be no longer incommoded by them.

The third is the *Prosis*, derived from *Piptin*, to fall, because that in this Disease the Eye-lashes fall into the Eye. 'Tis a turning inwards of the upper Eye-lid, in such manner, that the *Tarsus*, where the Hairs are planted, being bent inwards, they enter the Eye, and very much fatigue it. This Disease proceeds from a Superfluity of Moisture, which softens and relaxes the upper Eye-brow, so lengthening it, that the Eye is thereby incommoded, and cannot keep it self open. The Ancients propose to us an Operation, which few People will approve; 'tis to make on the upper Eye-lid two Incisions in form of a Crescent, whose Points join together; these Incisions being distant from one another, as far as the Operator believes

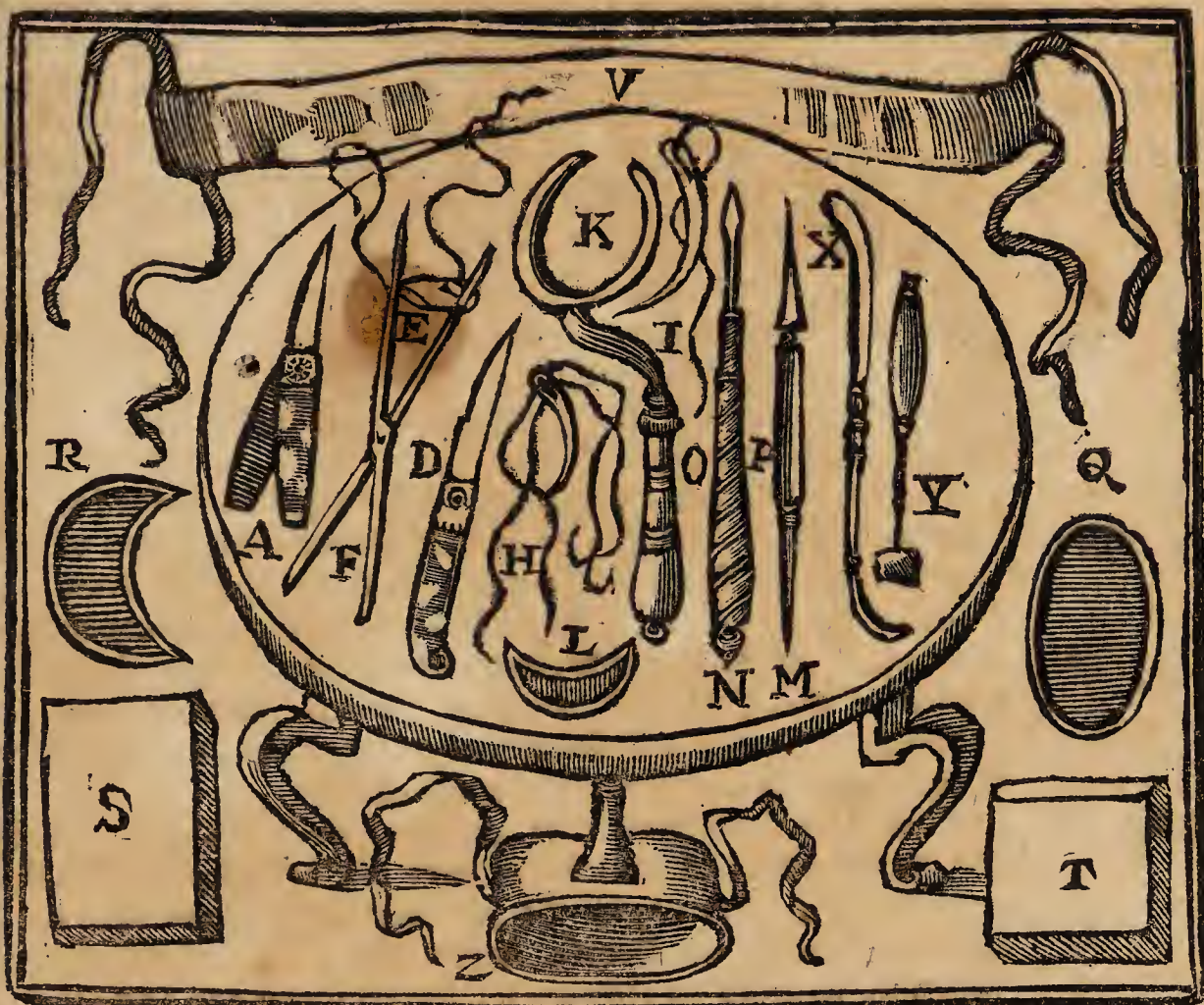
*Operation
of the An-
cients.*

*Modern
Practice.*

believes the Eye-lid to be relaxed, to flay off the Skin betwixt them, then to sow up the Wound ; but not close it farther than is necessary to enable the Part to cover the Eye. This Operation, which of it self is tedious and cruel, even after 'tis over, is exposed to two great Inconveniencies ; one of which is, that if we have not taken off enough of the Skin, our Labour proves vain ; and the other, if too much, the Eye cannot cover it self : Wherefore I advise the abandoning of this Operation, and to make use of the dry Suture, which I have just shewed you, and astringent and comfortative Medicines, in which we are to dip the Bolster G, and the larger one, H, upon it, which we bind to the Eye by the Band I, which fastens the whole *Apparatus*.

FIGURE

FIGURE XXXV. For the TUNICS of the EYES.



There are four Operations practised on the Tunics of the Eye, with regard to four sorts of Indispositions, with PERATIONS which they are afflicted. The first is the *Hypopyon*, which on the Tu- Term is derived from *Hypo* below or under, and *Pyon*, Pus or NICS of the Filth, in order to hint, that this Disease is a Collection, or ga- EYE. thering of *Pus* behind the *Cornea*, which ordinarily proceeds from an Effusion of Blood, occasioned either by the Plenitude of the Vessels, or some Blow, or Fall. Before this Blood is turn'd into Matter, it causes very sensible and sharp shooting Pains; and when 'tis become *Pus*, which we discern by the Whiteness which appears across the *Cornea*, the Chirurgeon is to force it out, if he will put an end to the Patient's Pains. Some of the Ancients distinguish this Distemper into two Spe- Two Spe- cies, calling the first *Onyx*, a Greek Word which signifies a cies of this Nail, because the effused and gathered *Pus* under the *Cornea* Distemper. represents the Figure of a Finger-Nail, leaving the general Name of *Hypopyon* to the second Species, which produces it self

self when the purulent Matter is in greater quantity, and takes up half of the black of the Eye. In order to its Cure, we are to try to dissipate the Matter under the *Cornea*, if its quantity be but small, to that end making use of Fomentations, and Resolvent *Collyria*, made of Fenegreek and Fennel; after which we proceed to the Operation, in which we are to make an Orifice in the *Cornea* with the Lancet A, which we insinuate at the lowest place, in order to give the *Pus* the more commodious Issue. We are not to be surpris'd when we see the aqueous Humour run out with the *Pus* at the Incision; that Humour easily repairs it self: But the Scar which grows on the *Cornea* frequently proves an Impediment to the Sight. After the Aperture, we make use of Repercussive and Anodyne Remedies, and at the end of the Cure apply *Collyria*, deterfive and desiccative Powders. *Galen* tells us, that in his time there was one *Justus*, an Oculist, cur'd the *Hypopyon*, by moving and shaking the Head in a certain manner, the Trial of which Remedy costs nothing.

Use of Col-
lyria.

Of the

Pterygion.

The second is the *Pterygion*, which Word is derived from *Pterix*, a Wing, because this Disease assumes the Shape of an extended Bird's Wing: 'Tis call'd in *Latin* *Unguis*, from its being of the Colour of a Man's Nail. 'Tis a membranous Excreffence in the Eye, which generally rises originally at the great Corner of that part, and rarely at the less, spreading on the conjunctive Tunic, and sometimes as far as the *Cornea*, where it covers the Eye, and darkens the Sight.

Its Species.

There are three Species of this Indisposition: The first is the *Membranous*, of which we have just been speaking; the second the *Adipous*, from the Resemblance it bears to a congeal'd Humour like Grease, breaking at the first when we touch it, in order to separate it; its Beginning and Symptoms are the same with those of the former. The third is call'd by the *Latins* *Panniculus*, by reason that it seems like a bit of Linnen, and is the most malignant of all the three, being intermixed with large red Vessels, which enflame and ulcerate it, which renders its Cure the more difficult. All these Species of Indispositions are not always adherent to the conjunctive Tunic in all their Parts, but only at their Ends: Wherefore there is sometimes distance enough left to pass a bent blunt Needle betwixt the *Conjunctive* and the *Pterygion*. There are but two ways of curing it, which are the consuming it with the Powders of Verdigrease, Vitriol, or burnt Allom, when young and small; and to eradicate it when large and hard; the last of which Methods is not always practicable; for in great and inverted *Pterygions*, which are cancrus, the Pain of which proceeds as far as the Temples, they are not to be touch'd.

Of the Ope-
ration.

When the Chirurgeon undertakes this Extirpation, after having prepared his Patient by general Remedies, and plac'd him commodiously, he is to cause one of his Servants to turn out-wards

wards one of the Eye-lids; and doing the same by the other himself, he is then to pass the curve, blunt Needle B, threaded with the Thread C, under the *Pterygion*, and with the two ends of the said Thread raise up and draw it towards him, in order to separate it from its Adherences with the small Incision Knife D, carefully avoiding the wounding of the *Cornea*; rather leaving a small part of the *Pterygion* to the future Consumption, which the Chirurgeon is afterwards to go to work on. The rest of the Cure is perform'd by *Collyria* and Desiccative Powders; the Patient is to be dress'd three or four times a Day, obliging him to open his Eye every time, that the Lids may not stick to the conjunctive Tunic.

Of the
Cure.

The third is the *Proptosis*, which Word is derived from *pro*, before, and *ptipin* to fall. This Term, which is convertible to all Parts of the Body which are started out of their Place, is here particularly applied to the Eye when it pushes or jets out, or proceeds beyond its Orbit, by reason of the Relaxation or Rupture of the *Cornea*. The Tumour, which is produced by the *Urea*, takes several Names according to its Size, and the things which it resembles: Authors divide them into five Species. The first, in which the Tumour is smallest, is called the *Myocephalon*, because shap'd like a Fly; the second *Staphytoma*, in Size and Figure resembles a Grape-Stone; the third is the *Rhagoidis*, which is the falling out of the *Uvea*, by reason of the Corruption or Læsion of the *Cornea*, which produces a round black Tumour like a ripe Grape-Stone; the fourth is call'd *Melon*, because that the *Uvea* coming out in greater quantity, produces a larger Tumour in figure and bigness, resembling a small Apple. The fifth is called *Nail*, that is a Nail, and happens when the *Uvea* being driven out of the Eye-lids, grows hard, and the *Cornea* becoming *Callous*, presses it so that it resembles the head of a Nail. These Indispositions bring with them two great Inconveniencies; one of which is the Loss of the Sight; and the other, the Deformity of the Face: The first of which is not to be remedied; but the second may two ways be helped, that is, either by Medicaments, or Operation; if the *Staphyloma* be recent, and caused by an Inflammation, which raises or swells the *Cornea*, we are to endeavour to digest and resolve the Matter by Remedies composed of Mucilages, prepared from the Seeds of *Time* and *Fennegreek*, and a little Honey: But if it will not dissolve, we are to give it Issue by Operation, that is, by the Point of the Lancet A. But if the *Staphyloma* be not malignant, and its Basis but small, it may be better extirpated by Ligature, which is performed two ways. To which end the Patient's Head being placed on the Chirurgeon's Knees, (he being sitting) that Operator makes the slipping Knot E, on the Forceps F, of which he slides it on the Tumour, which he binds, and daily tightens by drawing that Knot closer, 'till it falls off: Or else he

he runs a Needle G, threaded with two Threads H I, of several Colours, through the middle of the Root of the Tumour, extending it from the great Corner of the Eye to the lesser: The Thread being pass'd through, he removes the Needle, and taking the two ends of the same Colour, he tyes them together on one side, and does the same by the other Thread on the other side; and drawing them closer daily, these Threads will by little and little cut the Tumour. In order to make these Ligatures, the Chirurgion makes use of the *Speculum Oculi* K, to hold the Eye firm during the Operation: Which perform'd, we apply the proper Remedies to assuage the Pain, carefully avoiding (in our Dressing) the drawing of the Threads, which frequently stick to and dry with the Remedies. When they fall of themselves we may make use of the little Plaister L, and cleansing the Ulcer, consolidate and heal it as much as is possible in such nice and difficult Cases as the Distempers of the *Cornea*.

Of the Cataract.

Its Cause.

The fourth Disease of the Eyes is the *Hypochyma*, which word is derived from *Hypo*, under, and *Chym*, to dissolve, because this Disease seems to be a Humour dissolved in the Eye: 'Tis otherwise called a *Cataract*, from *Keras*, Horn, by reason of the resemblance which this Humour under the *Cornea* bears to Horn; and in Latin *Suffusio*. This Distemper is an exotic Matter which imperceptibly gathering and condensating, becomes like a thin Membrane or Skin, betwixt the *Cornea* and the *CrySTALLINE*, in the *aqueous Humour*, before the Orifice of the *Uvea*, hindring the Luminary Rays of the Objects striking on the *CrySTALLINE*. We consider this Indisposition in three several times, *viz.* First, in its beginning, when the Patient believes he discerns before his Eyes, Flies or unnatural grotesque Figures, when 'tis call'd *Imaginatio*. Secondly, in its middle Estate, when it forms it self, condensates, and very much diminishes the Sight, when 'tis call'd in Latin *Aqua*, and in English *Suffusion*. Thirdly, when 'tis perfectly form'd, and has wholly eclips'd the Sight, when 'tis call'd in Latin *Gutta obscura*, and in English by the general Name of *Cataract*.

Its different Species.

The Differences and Species of Cataracts deduce themselves from three things: First, from their Colour, which in some is either that of Plaister, Pearl, Sea-water, or burnish'd Steel, whence they are stil'd Green, Citron colour, Yellow or Black. Secondly, from their Texture, some being subtile, and so thin and transparent as to allow of seeing through them, and others so gross and close as absolutely to darken the Sight. Thirdly, from their Quantity or Extent, with regard to which there are some which cover but a part or half of the Orifice of the Eye-ball, so that the Patient cannot discern any more than a part of the Object which presents it self opposite to the place which is not cover'd, and others wholly cover that Aperture, and occasion an utter privation of Sight.

The

The Chirurgeon is to deduce his Prognostic from two things, the Patient and the Disease. First, if the Patient is very young, not exceeding, for Instance, four or five Years; or when old, and his Eyes are red and blear'd, if he is afflicted with continual and vehement Pains in the Head, or has a natural weakness of Sight, the Operation is not then to be attempted. Secondly, if the Cataract is Yellow, Green or Black, 'tis incurable; but if a Pearl colour, Sea-green, or of the colour of burnish'd Steel, the Chirurgeon may cure it. We are also to examine the substance of this thin Skin, which is done by covering the well Eye, gently rubbing the Lid of that which is indisposed, and suddenly opening it; for if the Ball of the Eye dilates it self, and immediately returns to its former Figure, the Film may decrease; but if there be no dilation, 'tis a sign that it sticks to the *Uvea*, or that there is an Obstruction in the Optic Nerve, and we ought to spare our pains, by reason that after having diminish'd it, the Sight never returns. 'Tis also to be observ'd, that at the same time that the *Pupilla* is dilated by Friction, the Cataract is not divided or separated, which shews that the Matter is not of a sufficient consistence, nor dry enough to bear the Needle, which would pass through it as through Water, or crumbly soft Cheese; wherefore we are to wait its acquiring such a firmness and consistence, as renders it capable of Operation. If the Patient can easily judge of exterior Colours, the Cataract is not yet ripe; but if he cannot distinguish Objects, and before rubbing the Eye affected, as above, the Film continues firm without either separating or dividing, we are thereby inform'd that 'tis connected by some Fibres, and that it is of a good and proper substance to be abated.

A *Cataract* is cured two ways, by ordinary Remedies, or *Preparati-* by Chirurgery: The former may succeed at its beginning; but *on of the* when this Disease is confirm'd, nothing but Chirurgery can *Patient.* compass that end. When it begins, we may hinder its encrease by a sober and drying Regimen of Living, by Bleedings and Purgings, by the application of Cupping-Glasses, Blisters, Caustics or Setons, and by the use of Masticatories, or Carmi-native and Digestive Powders. The conjunct Matter, that is, that which begins to appear in the Eye in the form of a Mist, is commonly dissipated by *Collyria*, attenuant, incisive and dissolvent Powders: Very warm Pigeons Blood drop'd into the Eye is very good; 'tis said that the Breath of an Infant which has chew'd Anis or Fennel, being forc'd into this Organ, proves efficacious towards the dissolving of the morbid Matter, or stopping its progress. *Fabricius Hildanus* invented a little Glass Viol to hold a Liquor on the Eye; its Figure is Oval, to adjust it to that part, and it has a passage at the top, through which, when 'tis apply'd to the Eye, the Liquor with which we would bath the Part, is powred, and two Strings to tie it behind the Head in order to keep it fast on the Eye: He pretended by this Method

Method to dissolve the Humours which might have soak'd into the Membranes, and dissipate a Cataract at its beginning: You have the Figure of it represented at the Letter Z.

If by the use of all these as well general as particular Remedies, we cannot destroy the Cataract, we let it ripen of it self without doing any thing to it, and wait 'till 'tis grown firm enough to bear the Instrument which must consume it; which we perform, duly considering what is to be done before, during, and after the Operation.

Before the Operation is resolv'd on, the first thing we are to think on is the choice of the Time, which necessity not very much pressing in this case, is in our Power: The Spring or Autumn, and the Wane of the Moon, are generally pitch'd upon. We prepare the Patient by more or less Phlebotomy or Purgation, according to the degree of Plenitude in which we find him: The appointed Day, (which must neither be windy nor rainy, but clear and serene) being come, we dispose all the *Apparatus* necessary to the Dressing immediately after the Operation; for, as for the Instruments they are quickly ready, no more being requisite than barely a Needle, which depends on the choice of the Operator. If he discerns by the Dilation of the *Pupilla*, that the Cataract does not stick to the *Uvea*; but on the contrary floats and waves on the *Aqueous Humour*, he is to make use of a round Needle M, big enough to avoid cleaving the Cataract too soon, and to couch it with the greater ease, by taking it at a larger part. If he concludes that it is fasten'd by the Fibres to some parts of the *Uvea*, he is to take the Needle N, pointed like a Lance, to cut the Fibres on occasion, and the more easily to disengage it. Both these Needles are mounted on the small Handles O, P, in order to hold them the faster.

*Situation
of the Pa-
tient.*

*Servants
Office.*

*Manner of
couching
the Cata-
ract.*

We begin the Operation by causing the Patient to sit on a Bench which runs betwixt his Legs, in a very clear Place where the Sun may come, for we make use of no exotic Light in this Operation. The Chirurgeon in like manner seats himself on the same Bench, with his Back to the Light, and his Face towards that of the Patient, whose Head, a little lean'd backwards, is supported on the Breast of a Servant: The Operator then fixes a Bolster and Bandage on the well Eye, to prevent the Patient's being on any occasion affrighted; then taking the Needle by its Handle, with his Right-hand, if the Operation is to be perform'd on the Left-eye, or the Left-hand if on the Right-eye, he chews a little Fennel, which he blows into that Organ in order to excite some motion of the *Pupilla*, and consequently of the Cataract, and as soon as he has directed the Patient to turn the Eye towards his Nose, he plunges the Needle into the Body of the Eye on the side towards the small Corner, and thrusts that Instrument forwards, inclining the handle towards the Temple, 'till he perceives it has cross'd the

Cornea

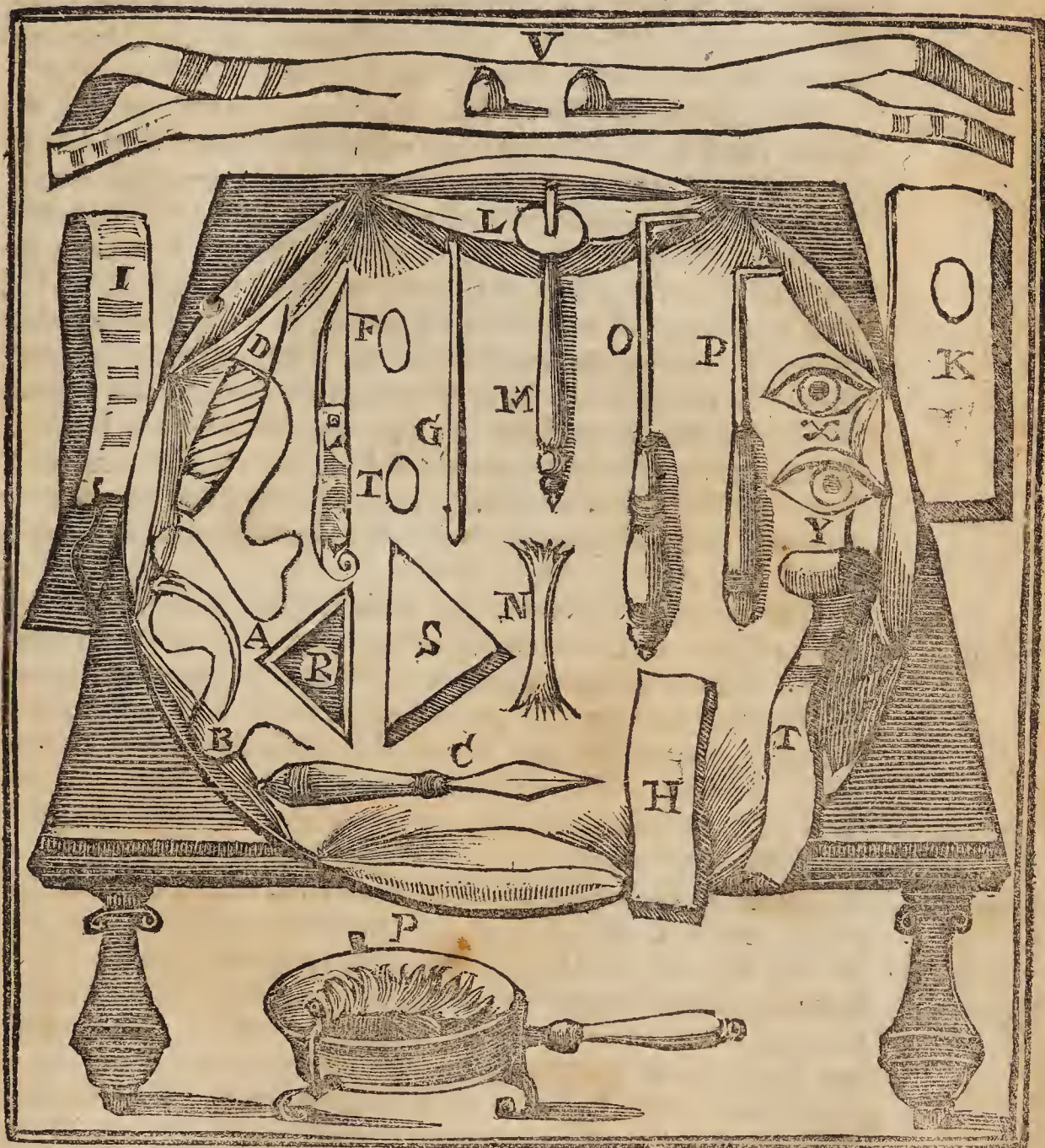
Cornea, and reach'd the middle of the Cataract, which he seizes at the upper part with the point of the Needle, and couches or thrusts down below the Ball of the Eye, where he holds it down during a small space of time; which if it stay there, the Operation is finish'd: But if it flies up again as soon as let loose, it must be again thrust down with the same Needle, and pressed yet harder, to prevent its rising again any more. If after all our Precaution, in order to discover the Nature of the Cataract, it prove Lacteous, and as soon as we have touch'd it, it opens and divides, not being able to bear the Needle which runs through it as though 'twere milk Curds, by turning the Instrument from one side to the other, the Chirurgeon is to cleave it into so many small Particles that it may separate it self, carefully avoiding the touching of the *Uvea* Membrane, which is full of small Veins, so that 'twill be difficult to escape the opening of some one of them which will occasion the effusion of some drops of Blood, which will cause a *Hypopyon*. If the Cataract be of a direct contrary Nature, and is so hard that the Needle at the touch of it makes a noise as though it grated against Parchment, and the Fibres so strong that it rebounds like a Drawbridge, we are then to raise it up with the Needle by the lower part of it, which regards the under Eye-lid, and rolling it about the Needle, with a spring turn it upside down all at once. The Operation being finish'd, we withdraw the Needle, and usually shew the Patient two Glasses, in one of which is red Wine, and the other Water, and if he can distinguish the Colours, we are sure that the Operation is well perform'd: Some Physicians deny this Evidence, but 'tis the practical one.

After the Operation, we lay on the Eye a defensative Plai- *Dressing*
ster Q, composed of Whites of Eggs, and Plantain, Rose and *after the*
Night-shade Waters, and laying withal on the Temple the *Operation.*
astringent Plaster R, to prevent Fluxion, we apply the two
Bolsters S, T, dipp'd in refreshing Waters, one to the Eye, and
the other to the Temple, and over them a Bandage which co-
vers both Eyes. We immediately put the Patient to Bed,
where he must lye on his Back for some Days, with his Head
raised indifferently high; we bleed him in the Evening, and keep
his Belly open. He must neither speak, nor take any solid *Regimen.*
Nourishment, for fear the chewing should either occasion the
raising of the Cataract, or the falling of a Flux on the Eye:
We are not to make him open his Eye 'till three Days after-
wards, though we are oblig'd to change the Remedies often,
lest drying they might hurt that Organ by their hardness.
Whilst we are changing them, the Light is to be plac'd be-
hind the Patient's Head, that he may not be incommoded by
the Cataract; and the Dressing is to be perform'd without mo-
ving his Head. To conclude, he must keep himself very still,
X and

and the Light out of his Chamber before the Symptoms are pass'd over.

Of the Extraction of 'tis the Extraction of exotic Bodies entred the Eye. The Chirurgion is frequently applied to when the Patient has had all done to him that can, by rubbing and blowing into the Eye, the Pain which he feels forcing him to desire a speedy help: To give which we turn out one or other of the Eye-lids, and endeavour to discover the exotick Body, in order to force it out with the small Instrument X. If we cannot see it, we are to make a small Bath for the Eye, obliging the Patient to lye down, and pouring into the great Corner a little warm Water, which coming out, after having wash'd the Ball of the Eye, may draw along with it the dirt or small spark which occasion'd the Pain: And if we cannot get it out this way, we fasten to a Sprig of Birch a small bit of very fine Sponge Y, and sweep with it all the fore-part of the Body of the Eye, in order with the Sponge securely to bring away whatever was got under the Eye-lids. Which done, the Patient will instantly be at ease; and then we make use of Collyria and refreshing Waters to prevent the Inflammation which may ensue.

FIGURE XXXVI. For the CORNERS of the EYES.



OF the three Operations which the Chirurgeon performs on the Corners of the Eyes, the first is the *Eccanthis*, which term is deriv'd from *Ec*, without, and *Canthos*, the Corner of the Eye, to express that the Disease which answers to it is a fleshy Excrecence which comes in the great Angle of the Eye. There are two sorts of it, the one indolent, reddish, tender and gentle, easily submitting to common Remedies; and the other, which is painful, lead-colour'd, malignant, and obstinately resisting all Remedies, is only cur'd by Operation. Authors assign three principal Causes of this Disease; First, a melancholic

The Operations practis'd on the Corners of the Eyes.

lancholic Humour, which encreases and hardens the substance of the Flesh of the above-mentioned place, and renders it as it were warty. Secondly, An *Hyperfarcosis*, the Etymology of which Word is *Hyper*, above or excessively, and *Sarcoein* to produce Flesh, by reason that this Indisposition sometimes proceeds from a neglected or ill dress'd Ulcer in that part, which comes to be fill'd up with superfluous Flesh. Thirdly, a remainder of the *Pterygion*, which being neither cut, nor consum'd, grows and hardens in that manner.

Cure.

In order to the Cure of the first Species of *Eccanthis*, we are to consume the Excrescence with burnt Allom, calcin'd Verdigrease, red Mercury, or Spirit of Vitriol; but the second, which is hard, intractable and malignant, must be removed by Incision. To perform which, with the Needle A we run the Thread B, thro' a-cross this Flesh, in order to raise it, and by that means to cut it with the Knife C, close to the Glandule, carefully avoiding the touching of the Lachrymal-duct, which goes into the Nostril; for if it stop in cicatrising, the *Lympha* which incessantly moistens the Eye, and becomes the cause of Tears, when extraordinarily press'd in its filtrating near or about these Organs, not being able any longer to continue in its former course, runs down the Cheeks, and occasions a continual Weeping or Flux of Tears.

The Anchylops.

Of external Remedies.

Of the Operation.

The second is the *Anchylops*, deriv'd from *Anche*, near, and *Ops* an Eye, in Latin *Abscessus Ocularis*; that is, a Tumour, or an Abscess not yet open, situate betwixt the great corner of the Eye, and the Nose, and form'd from a thick glutinous Humour, almost like that contain'd in that Species of Cancers call'd Wolves, which augments and ripens by slow degrees, and with an easie and light Pain. To cure it, supposing general Remedies to have been first made use of, we apply to the Tumour, at its beginning, Desiccatives and Astringents, to suppress, consume and dry up the Humour gather'd in that part. If the Tumour continues, and by its supervening Redness and Inflammation convinces us that it tends to Suppuration, we are to open it with the Lancet D, and if we believe that the Matter is inclos'd in a *Cystis* or *Vesicula*, we are to separate it, or consume it with *Trochisks de Minio*, or precipitated Mercury, in order to cleanse and cicatrise the Wound: We are to take Notice, that as soon as this Tumour is open, it exchanges its Name of *Anchylops*, for that of *Ægilops*, which expresses the Indisposition which I am going to treat on, and the Operation which I shall immediately lay before you.

Of the Ægilops.

The third is the *Ægilops*, which term is deriv'd from *Aix*, a Goat, and *Ops* an Eye; from the Eyes of that Animal being very subject to this Distemper, which is what we call a *Lachrymal Fistula*, which is a small callous and deep Ulcer in the great corner of the Eye, at the place of the situation of the *Lachrymal Glandule*, which is nothing but a fat fleshy Purse, interspers'd with several almost imperceptible Glandules. This Ul-

cer

cer always begins with a small Abscess in that place, where the Matter which putrefies soon taints the Bone, by reason there is but a small space betwixt it and the Skin, and being more spongy than other Bones, it rots sooner. If at first, when an Abscess appears at the corner of the Eye, the Patients would suffer it to be pierced, the Fistula might be avoided; but for fear of a Scar remaining in the Face after cicatrising, he defers it 'till it breaks it self; the two very Melancholy Consequences of which are, that the continuance of the Matter there gives time to putrify the bone; and the other, that it makes such a small Orifice in the Skin, that we cannot convey the Medicaments necessary to cleanse it to the bottom of the Ulcer, so that continually excudating without intermission the Fistula is fed, 'till the Operation cures it.

Of these Fistula's some are open within, and the other without: The first proceed from a sluggish Humour on which the outside forms but a small Tumour no bigger than a Pea, which being pressed by the Finger, casts into the Eye, I would say betwixt Eye-lids, a serous and sometimes viscous and white Sannies. The other are produc'd from an active and hot Matter, which in corrupting growing sharp, eats the Bone which is thin and porous, and at the same time sufficiently makes its way out to run continually 'till we dry up its source. When they are old, they waste and lessen the Eye; the Cavies commonly corrodes and penetrates as far as the Bones of the Nose, which renders the Breath strong and stinking, and the Cure very difficult: But when the Fistula is recent, and its Orifice distant from the Ball of the Eye, it affords hope of Success in its Cure, either by Remedies or Operation.

*Differences
of these
Fistula's.*

In both ways of curing these Lacrymal Fistula's, we are to prepare the Bodies by a regular way of Living, Bleedings, Purging, Cuppings and Vesicatories. If we would make use of the gentlest way, which is that of Medicaments, we are to take different methods with that which is only open within-side, from those to be observ'd with that which is open without.

*Of the
Cure.*

When there is but a small Eminence without, and pressing it we find that the Matter which forms it runs into the Eye, we have reason to believe that Matter to be kind and gentle, and that 'tis not acrimonious enough to force the Skin, and make it self an Issue out that way; and when it cannot pierce the Skin, we have also reason to believe that it has not been able to eat into the *Periosteum*, and that the Bone is not uncovered, it being probable that this Matter may have gather'd in a little Purse betwixt the Skin and the *Pericranium*, without occasioning any Indisposition, attended with very pernicious Consequences. In this case, all that is necessary to the Cure, is for the Chirurgeon to hinder the gathering of the Matter in that vacuity, which has been successfully done by simple Compression, by which I have cured several, especially

Chil-

Children. I lay a little Plaister of burnt Cerus on the Tumour, and over that a small Triangular Bolster of the thickness of half an Inch. to fill up the corner of the Eye, and over that another of the same shape and thickness, but somewhat larger, having dipt them both in a desiccative Water, then I cover all with a narrow circular Band, which tightening the Bolsters on the little Bag, prevents the Humour gathering any more, and glues in the Vacuity, provided this course be continued for some Months.

If the Fistula is open on the outside, and we intend to attempt its Cure by Medicaments, we are to begin with dilating it to the bottom with Gentian Root, or prepar'd Sponge, after which the Chirurgeon cleanses it with the *Unguentum Apostolorum*, *Unguentum Ægyptiacum*, or pulveris'd Mercury. If the Bone be rotted, we are to touch it with some dregs of Oyl of Sulphur, or Oyl of Vitriol, soak'd into a very little bit of Cotton, which being laid on the Bone, will put a stop to its corrupting, but withal taking care to put the Patient to but little Pain with these Ingredients, for fear of drawing on a Fluxion; to all the circumjacent parts we are to apply several Bolsters moisten'd in refreshing Waters, after which the Ulcer will cleanse, dry, and cicatrise, pursuant to the common Methods.

How the
neighbour-
ing parts to
be treated.

All Practicioners agree the most certain and expeditious Cure of the *Lachrymal Fistula* to be the actual Cautery, with which they touch the Bone, in order to exfoliate it; but this Operation being an extreme nice one, and in order to its being well perform'd, requiring a dexterity and address acquir'd by a deep Reflection and long Practice, we shall now, as we have already done in other Cases, examine with attention what is to be provided and performed before the cauterising of the Bone, what observ'd in doing it, and the necessary Conduct afterwards.

Before we bring the Fire to the Bone, we examine first whether there is any external Orifice, or whether, if there be, 'tis large enough. If there be none, we are to make one; and in case it be too little, it must be enlarged; To which end, some Authors, with *Thevenin*, will have us apply a potential Cautery betwixt the Eye and the Nose, as far from the Eye as possible, taking care that we don't cut the Ligament of the great *Canthus*, or corner of the Eye (which will occasion Squinting, or make the Patient blear-ey'd;) and that in making a small Scarification on the Scar, we dilate the Fistula to the bottom, that it may be fitted to admit the actual Cautery. But other Writers, on a better Foundation in my Opinion, direct us to open this Fistula with the streight Incision Knife E, making a small Orifice in the form of a Crescent, in order to keep clear of the juncture of the two Eye-lids, and to carry the Incision to the uncover'd bare Bone, to which they apply the small

Preparati-
ons and pre-
cautions
in Cauter-
ising.

Stop.

Stopples of dry Lint F F, to absorb the Blood and Humidities, afterwards laying on the rest of the Apparatus, in order to apply the hot Iron the next Day.

The Hour then being come, and all things in readiness for Cauterising, the Patient must be seated in an easie Elbow-Chair, provided with a side leaning Place for his Head, and then we are to take off the Apparatus, in order to search it with the Probe G, whether the Bone be perfectly uncover'd; then with a Bolster H, and a Band I, we cover the other Eye, that the Patient may not have any apprehension of the Fire: Then we lay on the Eye next the Fistula the Bolster K, wetted in refrigerating Waters, which reaches over the Temple, being peirc'd at the Place where the Fistula is. This Bolster is to be large, to prevent hurting the Operator, and wetted to keep the Fire from the neighbouring parts. The Probe G, which we again thrust into the Wound, serves to guide to the Bone a small *Infundibulum*, or Funnel L, with a handle M, by which 'tis held in the Left Hand. We withdraw the Probe after having fixed the Funnel, into the hole of which we insert a false Tent of Lint N, to dry up the little quantity of moisture which may have soak'd into the bottom of the Wound, and the Bone then dry, with the Right Hand we thrust the actual Cautery, or Cauterising Iron O, red hot into the Cavity of the Funnel to the Bone, leaning lightly on it: If we think the first did not make a sufficient Impression on the Bone, to dissipate all the Humidities which have penetrated it, we then apply a second Cautery F; for which reason we are always to lay two in the Chafing-Dish, Q, full of Fire to be heated. We then draw out the Funnel, whose use is not only to conduct the actual Cauteries, but to spare the Patient the painful feeling of a burning Fire.

The Cauterising being perform'd, we stuff up the Wound with small Buttons, or Stopples of Lint, above which we lay a small Plaister of Ceruse R, of a shape adapted to the part, covering the Eye with a defensive Plaister, and laying over that a triangular Bolster, with the usual Band for the Lachrymal Fistula T. In the future Dressing, we are to take care that the Flesh does not grow again too fast, and cover the Bone again before 'tis exfoliated; by reason that growing over the burnt part, it injures the sound place, and when they join together, they are to be separated by Exfoliation, we are then to consume this Flesh with the above-mention'd Powders and Oynments. When we believe this Separation of the Bone to be made, which does not always sensibly appear, but which we may securely enough conjecture by a good Flesh coming over, and sticking fast to the Bone, we then suffer the Wound to heal, and bring it to cicatrise.

Dressing of the Wound.

Of two less important,

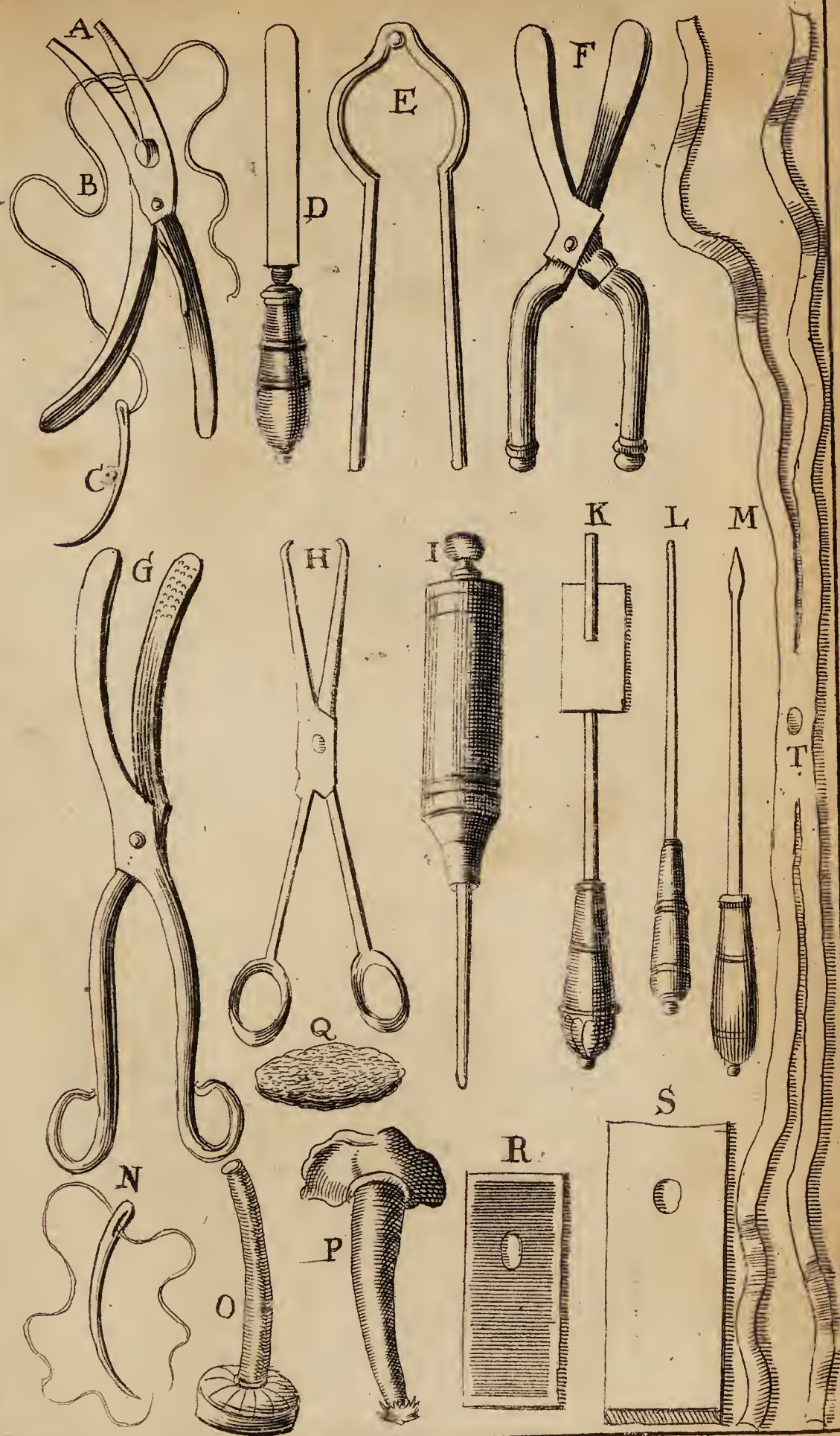
I shall, Gentlemen, conclude this Demonstration with two Operations which fall under our Subject, and tho' inconsiderable, but frequent Operations.

ble, they not requiring the utmost Industry of the Chirurgeon, are yet very advantageous; the one is the preventing Childrens Squinting, and the other the fixing in a Glass Eye in the place of a natural one which is lost.

Children squint either naturally when they bring this Vice into the World with them, or accidentally by lying in a false Light, which glances in upon them at the side, instead of which the Cradle should always be placed with the Feet towards the Window in the Day time, and opposite to the Candle at Night; for they are always sure to turn their Eyes towards the Light, so that by an ill situation of their Bed, the Muscles contract the ill habit of drawing the Body of the Eye unequally. When we perceive this defect in Children, we are to provide against it by making use of the Spectacles V, which direct their Eyes, and accustom them to look directly on each object, by keeping them in a parallel situation to them. These Spectacles are of Ebony, and excavated in the middle of the side, which is placed against the Eyes, and pierc'd with a little hole, where sometimes a small Glass is fix'd, which preserves these Organs which are to be provided with these Spectacles both Night and Day for some Years, if we would securely set right a Sight which has long stray'd.

Tho' the making and application of Glass Eyes seem at present to be the business of Oculists, 'tis yet a Chirurgical Operation comprehended in the fourth Species of that Art called *Prosthesis*, which adds to Nature what it is deficient in. When a Person has lost an Eye by any Accident whatsoever, we cause to be made of Chrystal those two X and Y, of the same Figure with the remaining Eye, and also a little larger, they being to be fix'd betwixt the Eye-lid to hold them. They are to be painted of the same Colour with the natural one, and bak'd in a Furnace, as is the painted Glass in Church-Windows. When the Artificial Eye is well fixed, it looks like the other, except that it cannot move it self, unless only when the Body of the Blind Eye is not very much wasted and shrunk; for then we discern some Motion which depends on that of the Ball of the Eye on which 'tis placed. Those who make use of these Eyes are obliged to have several in reserve, because they may fall or break. By means of these Artificial Eyes we correct a shocking Deformity so well, that as they are now made, we must look very nicely before we discover Art to have repair'd that Natural Deficiency.

The End of the Sixth Demonstration.





The Seventh
DEMONSTRATION
O F
Chirurgical Operations.

Of those which are practised on the
FACE.

Of the POLYPUS.

GENTLEMEN,



Though 'tis true, the whole Chirurgical Art *Of the end* has no other end, than to preserve or re-*of Chirur-* establish Man in the just Proportion of all *gery.* the Parts of his Body ; yet 'tis with regard to this Part principally that 'tis obliged to redouble its Application, and engage all its Address, to preserve in the Face that Perfection which it received from the Author of Nature. This Part, tho' the Image of God, is not less attacked by Diseases than the rest of the Body ; whence it is that it furnishes out as numerous a Train of Occasions of exercising our Industry : And the Operations which regard the Face requiring a greater Nicety, than those performed on other Parts, I shall now proceed to demonstrate them to you with all possible Exactness, and they will make up the whole of our present Entertainment.

The

The Operations performed on the Face are so numerous and various, that it's impossible to compass them all in one Day; and though we yesterday explain'd both those of the Eyes and Head, you will find the Remainder will suffice to fill this Day's Demonstration. I shall begin with those of the Nose.

The *Etymologists* derive *Polypus* from the two *Greek* Words *Poly*, many, and *Pous* a Foot; by reason that the Flesh which forms this Malady is like the Sea-Fish call'd a *Polypus*, having many Roots which resemble the Feet of that Fish; whence the *Latins* have given it the Name of *Multipedes*.

'Tis a fleshy, fungous and superfluous Excrecence, which forms it self, and grows in the middle of the Nostrils, and incommodes the Respiration. The *Polypus* commonly fixes on the *Ethmoides*, or *Os Cribrosum*, and frequently the bony or gristly Parts of the Nose; which being spongy are more apt to produce it, than the proper Bones of that Organ and the *Ethmoides*, which are of a harder Substance.

Its Original

The *Polypus* frequently succeeds the *Ozaena*, and those Ulcers of the Nose which are caused by the Flux of Acrimonious and Melancholic Humours, which having corroded the Membrane with which those osseous Parts abovementioned are covered, make room for that Flesh to engender and grow daily; and that the more easily, because 'tis impossible to reach them with any Medicaments, which otherwise might consume them at the beginning. The excessive Humidity which falls on that Part, in Conjunction with a crude and pituitous Blood, help to feed it: This Blood not being qualified to produce sound Flesh, and be transformed into the Substance of the Parts, fills the Pores of the gristly Parts of the Nose, where meeting with some ends of the Fibres of the mucous Membrane out of their Contexture, it animates it, and forms it into a *Polypus*, which it fomented and stimulates to that degree, that this Excrecence not only fills the Nostrils, but shews it self in the Mouth behind the *Epiglottis*, and sometimes extends so far, as to descend into the *Aspera-arteria*, when it endangers the Suffocation of the Patient whilst asleep, if due Care be not taken.

Difficulty of its Cure.

Some *Polypi* so fill the Nostrils, that the Nose becomes hard and schirrhous; when the Patient breaths only at his Mouth, and that with much Pain, and a Noise as though he snored. When both Nostrils are thus wholly stopp'd, this Disease is almost incurable; because this Obstruction, which hinders the Passage of the Air so necessary to Life, is lodged very deep, and sprouts out in numerous Branches. 'Tis said that Horses are very subject to this Distemper, which renders them broken winded.

The pituitous Membrane disposed to produce it.

If we cast our Eyes on the Structure of the interior Membrane of the Nose, we shall find it to have a large share in the Generation of the *Polypus*, it being very capable of affording a

Foundation

Foundation and Matter to these Excrescencies, being thick, spongy, porous, and imbued with a viscous Humour, which it separates from the Blood by the natural Texture of its Fibres, and the Configuration of its Pores, which very much contribute to the Formation of this fungous and superfluous Flesh.

To come at a clear Idea of its Generation, we need only consider that the Blood may be charg'd with viscous Parts, by the use of certain indigested Aliments, or by the Deficiency of the natural Fermentations and Filtrations; so that these clogging Particles not being able to follow the other Principles of that Humour, quit them; above all other places, in those of the Cavities of the Nose, where there are very few Organs to accelerate their Course: These mucous Humours then accumulating in the Membrane, which covers the interior Part of the Nostrils, swells it, dilating its Vessels and Glands as much as its Fibres are stimulated to extend themselves by the Irritation of this Matter which ferments and sharpens by its Continuance there.

We observe five sorts of *Polypi*. The first being like a fungous and soft Membrane, resembles a relaxed *Uvula*; it fastens on the Cartilage, in the middle of the Nose, and fills it with a tenacious and pituitous Humour. The second is a whitish round Eminence, which is soft when we touch it; it proceeds from flegmatic Blood, and grows insensibly 'till it occupies the whole Cavity of one Nostril, and sometimes those of both. The third is a harder Flesh, whose Colour is brown, a little painful, engendred by a gross, melancholick Blood; which, for want of being diluted by the *Lympha*, is almost scorch'd. The fourth is a hard Tumour, like dried smoak'd Flesh; and when touch'd, sounds as though we struck on a solid Body; it is insensible, and may be rank'd amongst the confirm'd *Schirrhi*. The fifth consists of one or several *Carcinomatous* Tumours fixed to the Cartilage of the Nose, and produced from a melancholic and adust Blood; they are painful, and in Nature like a Canker. Of all these Species, some are without Ulceration, though they emit a sanious and viscous Moisture; and the other ulcerated and incessantly send out a foetid and horrible stinking Sanies. *Its various Species.*

The *Polypus* is known at Sight, and by its Symptoms. To discover it by the Eye, we need only place the Patient's Head in a clear Light, and lean it backwards; when we shall discern a Tumour, which filling the Nostril, ascends and descends according to the Motions of Respiration; and if it prove difficult to discern it this way, with the *Speculum-Nasi* we are to dilate the Nostril, so as to see to the bottom of it. The Symptoms which attend and manifestly discover it, are the enlarging of the Nose by the Tumour which it contains, the difficulty of breathing resulting from the Interruption of the Passage. *How to know the Polypus.*

Passage of the Air, whence the Patient respire as though he snored, and always sleeps with his Mouth open.

Prognostic.

The Judgment which a Chirurgeon ought to make, depends on the nature of the *Polypus*: Those which are Carcinomatous or Cancrous, are incurable: These he will know by the hardness, livid and Lead-colour, foetid Smell of the Excrecence, its Adherence to the *Osseous Blades*, and the Pain it occasions. This sort of *Polypus* is not to be touch'd; but those which are indolent, soft, flaccid, white or reddish may be cured; and 'tis in case of this last sort that we are allowed to apply the Operation.

Various ways of operating.

Our Authors propose to us five ways of performing it: First, by Corrosion; secondly, by Cauterising; thirdly, by Ligature; fourthly, by Incision; and fifthly, by Evulsion. I shall shew you the Methods which they lay before us, and leave you to determine which is the best.

These Writers will have us make use of Corrosives, in case of the *Polypus* being but small, not far in the Nose, and one which succeeds some Ulcers of that Organ: To this end they recommend *Chalcantum*, Lime, Orpiment, or Spirit of Vitriol, to consume it by slow Degrees.

Cauterizing with the actual and potential Cautery were anciently practised, when the *Polypus* was advanced to a midling size, and had a large Basis. The Ancients then dilated the Nostril with the *Speculum-Nasæ*, in order then to introduce a Tube which they placed on the Tumour, and through its Cavity conveyed a Fire-button, which burning that Flesh, crisp'd it as broiling does a Sausage: The Scar made by the Fire being fallen off, they again began the same Application, continuing on this Practice, 'till the whole Tumour was consumed.

The Ancients prescribe the Ligature to little hard Tumours with small Roots, and affirm that it proves successful when practised in the following manner: We are to thread the great curve, leaden, or Brass-wire Needle C, with the coarse wax'd Thread B, in the middle of which we are to make a slip Knot, which we are to fix at the end of the Crow's Bill Pincers A, as though the Ligature was designed for the Extremity of one of the Vessels; we are then to grasp the Tumour with the Crow's Bill, then slip down to its Root the mention'd Knot, which we are to draw tight, after having pass'd the Needle through the Nose, and drawn it out at the Palate; for this Needle bringing with it one of the Ends of the Thread, we are to draw that whilst we hold the other in our hand, which remains without the Nose; and so in drawing the Thread tighter, the *Polypus* is at last separated, and falls off from the Part. This Invention of a Ligature is well; but I fear the Execution of it is difficult.

Those

Those who operate by Incision pretend to have hit on a *Incision* better Method, which indeed has been practised for several *subject to* Ages, and approved by *Guido*, and other Masters of our Art: *great In-* To this purpose they have invented an Instrument D, which *convenient-* they call a *Polypicon Spation*, from *Polypsis* a *Polypus*, and *Spation* *cies.* a *Spātula*, from its Resemblance to that Instrument. 'Tis made purposely for this Operation, it has an Edge on one side only; they introduce it into the Nose as far as they can, and sliding its Edge betwixt the Partition of that Organ, and the *Polypus*, they separate the latter, carefully avoiding the cutting of the Cartilage at all, which indeed they can scarce help, the Cavity of the Nose being tortuous. When by this Means they believe they have not cut off all the *Polypus*, they slit the Wing of the Nostril to the Bone of the Nose, and then endeavour to cut off the Remainder of this Excrescence at its Roots: The Operation being performed, with two or three Stitches of the Needle they sow up the Part of the Nostril which they slit. Some of these famous Practitioners made use of a *Method* Packthread, in which they make Knots about an Inch distant *practised* from each other; and having run it through the Nostril, take *by some.* one end of it out at the Palate, and drawing the Packthread sometimes by one end, and sometimes by the other, hope, by Means of these Knots, to disengage the rest of the *Poly-* *pus.*

The fifth way is by *Evulsion*; the Glory of being the Inventer of which *Fabricius* pretends to, and we must own our Obligation to him, since it appears to be the best of them all. We are to seat the Patient in a Chair a little leaning backward, and having turned his Face to the Light, with the *Speculum-Nasæ* E, we may dilate the Nostril, to make room to introduce the Duck's Bill Pincers F, with the ends of which we pinch the *Polypus* as deep and as near the Base as we can, then giving it one or two turns, and drawing it gently, we pull it out together with its Roots; after which we suffer the Nose to bleed a little, to discharge and empty the Part. When the Palate is advanced as far as behind the *Uvula*, this Production usually follows the Branch we find in the Nose, because both are in one continued piece. But if that which shews it self behind the *Uvula* proves long and thick, 'tis much better to pull the *Polypus* out at the Mouth, than at the Nose; this is easily done with the curve Forceps G, which we may thrust into the Nasal Clefts, which are longer than the Cavities of the Nose, taking care that we don't pinch the *Uvula*, which is before the *Polypus*.

Pursuant to the Description which I have given you of this *Precaution* Indisposition, you must remember that it has several Feet or Roots by which 'tis fed; but by the four first Methods which I explained to you, we take away only the Body of the Tumour, the Roots always remaining behind, wherefore we are not

not to be surpriz'd if it shoots out again, the case being the same as with Trees and Plants, which never fail to grow out when they are only broken or cut even with the Ground ; but never shoot again when pluck'd up by their Roots. Having thus eradicated the *Polypus*, we ought reasonably to conclude that 'twill never grow again; and *Fabricius* assures us, that it never return'd in those on whom he perform'd this Operation : But yet I am willing to own that this Practitioner did not frequently perform this Operation, or else was more successful than others, since we find some of them return after this Extirpation, which does not yet hinder us from agreeing that this Method, being least subject to Relapse, ought to be preferr'd to all others.

Extirpation of the remains.

If after the Evulsion of the *Polypus*, the Patient yet feels something in his Nose which disturbs him, And when looking into it we find some small bit sticking to the bottom of the Nose, with the Tweezers or Pincers, shap'd like Scissars H, which cut only at the end, we take away the rest as far as we can, by reason 'twill otherwise serve as a Rudiment to produce

Dressing of the Patient after Operation.

After the Operation we are to make the Patient re-spire and draw through the Nose warm Wine, which will thoroughly wash all the Cavities fill'd with the humid Sanies which the *Polypus* detain'd there ; for otherwise it would not be necessary to draw the Wine thus, and make it fall into the Throat, to secure us that the Passage is open, for the Patients will perceive that by the short and certain proof of their own feeling, and may judge of the free egress and regrefs of the Air, by the facility with which they can breath with their Mouths shut, which they could not before do. Of all the Chirurgical Operations the advantage of this is the soonest felt, and the Patient reaps the greatest pleasure, for the very moment that he is delivered from such an insupportable Inconvenience, all his vital Functions, which before were suspended and disturb'd, reassume their ordinary Course, and pursue it without being retarded by any Obstacle.

How to stop the Hæ-morrhage.

If the Flux of Blood be but moderate, we are to let it issue out to ease the Part: But in case of a *Hæ-morrhage*, we are to stop it, by injecting into the Nose, with the Syringe I, some astringent Liquid, or by filling the Nostril with a Linten Tent P, which must be long enough, and wetted in some stiptic Water. We are to dress the Part with corrosive Unguents; for we are to endeavour the Consumption of all the Roots, which cannot be done without strong Mundicatives, to which are to be added caustic Powders stronger or weaker as occasion requires. I have seen a Patient dress'd with a Powder which came from *Montpellier*, which 'twas pretended infallibly prevented the Regeneration of this Flesh: But yet six Months after it came again, as it had done twice before, though eradicated by one of the most expert Chirurgeons of *Paris*. We make use

of

of the small Pipe O, which we fill with corrosive Powders, to hold which it has a bottom a little large. These Powders are to be as fine as Spanish Snuff, that by Respiration they may be drawn upwards, and disperse themselves all over the interior part of the Nose. At the end of the Cure we Syringe the Part with vulnerary and desiccative Waters, to dry up the moisture which is but too abundant in those Places. Lastly, we do our best to procure a constant and lasting Health to the Patient.

The *Polypus* is one of those Diseases which requires our pre-Regimen. caution with regard to the universal Regimen of Life: 'Tis not sufficient to have prepar'd the Patient before the Operation by repeated Phlebotomy, Purgations, and proper Diet; nor even to have perfectly well perform'd this Operation, to have, during the Cure, contain'd the Patient within due Bounds, and to have thoroughly cur'd him; but farther, after the Cure, he is to be treated in the same manner, as though we were certain that another *Polypus* would come; to which end we are to make an Issue in his Arm, or at the hind part of his Head; we are to Purge him frequently, and make use of sudorific Ptisans compos'd of *Esquine*, *Sarsaparilla* and *Guajacum*, directing the whole by the advice of a prudent Physician.

There comes into the Nose a fordid Ulcer which we call *Ozæna*, a word derived from the Greek Verb *Ozein*, which is to smell ill. 'Tis impossible to talk near with those who have this stinking Ulcer, without being struck with a very disagreeable Scent, whence they are insupportable in Company; and this Indisposition is held a sufficient reason for a Divorce.

This Disease derives its Original from the acrimonious and corrosive Humours which, falling on that Part, ulcerate and corrode it. Those who have had a Contusion on the Nose are very subject to it, by reason that the Ridge of their Nose being beaten in, instead of rising outwards, occasions a straightning of the Passage, which hinders the course of the excrementitious Humours which ought to pass out through the Nose: When these Humours have a great share of Acrimony, they ulcerate the place which stops them; and when but a little, they soak into the Membranes, which thereby become thick, and by that means more and more straightens the mention'd Passage; so that these Patients not being able to fetch their Breath through their Nose without pain, are continually snuffing up their Noses as though they were resorbing their Snot.

To cure these Ulcers, we are obliged to assist Nature, for they will not cure of themselves: Over these Ulcers grow Crusts, which fall from time to time, and are kept up as well by the vicious formation of the Part, as by the Mucosities which must incessantly pass through these Drains. We should carefully examine whether these Evils are not fomented by some Pocky

Pocky Cause, by reason that in that case we are to have recourse to the grand Remedy : But if we have no reason to suspect any such *Virus*, we are then at the same time to make use of the general and particular Remedies, which are to be Deseccatives, in order to absorb those Humidities whence the Distemper proceeds ; the use of the sudorific Ptisan, of the Powders of *Millepedes*, and Mercury is soverain ; and we apply to the Ulcer such Remedies as may cleanse, dry, and incarnate it : We cause the Patient, by the assistance of the small Pipe O, to draw or snuff up the Powders of Savine, Pomgranate Shell, Iris Roots, burnt Allum and Vitriol ; and lastly, we put in practice the small Operation so much recommended by the Ancients, which I shall now shew you.

*Usefulness
of the Pipe.*

We take a Steel or Silver Pipe, provided with a handle, that it may be held more steady, and of a size proportion'd to the Nostril, and long enough to reach the Ulcer, and beyond it ; 'tis not pierc'd at the end which enters the Nose, but has a small Platine at its Entrance, 'tis here mark'd with the Letter K. We introduce this small Pipe into the Nose, holding it with our Left-hand, and then in the Right take a small actual Cautery L, whose end is shap'd like an Olive-stone, we thrust it into the Pipe, where we leave it as long as is necessary to render the Tube so hot, that the Patient can no longer bear it : Then we withdraw the Cautery, and a little after introduce another M, to continue the heating of the Pipe, and consequently the Ulcer, which Authors pretend to dry up this way, by consuming the Humidities which it had soak'd in ; for which reason we have two Cauteries, that we may heat one whilst we use the other : We are to begin the same again the next day, and renew it daily during a considerable time, which it belongs to the Chirurgeon to determine, according as the obstinacy of the Disease obliges him to continue the use of this Remedy.

Of the setting on a Nose cut off.

The Nose is liable to all sorts of Wounds ; but those which require the most expeditious Operation, are such as when by a Cut on the ridge of the Nose it is almost separated from the Face, and falls on the Mouth ; it must then immediately be return'd to its place, and we are to give it a stitch with a Needle

How to sew on a Nose cut off.

at the upper part, and in its middle. This stitch is to perform'd with the crooked Needle N, threaded with a wax'd Thread, we begin to sew from without inwards at the lower part of the Wound, and tye the two ends of the Thread on a small Bolster at the upper part of the Nose. I think it needless to make two Stitches more, one on each of the Wings of the Nose, for the Nasal Bandage will supply their Place, and besides we are to make as few Stitches on the Face as necessity will excuse us, to avoid the Deformity of the Scars which they leave behind. We lay on the Wound the Pledget Q, charged with Balsam of Peru, or that of *Arcans*, then the Plaister R, and

and Bolster S above it, then the Band T, which has four Ends which we fasten to the Cap, and with which we make the Nasal Bandage : We are to observe, that the Plaister, Bolster and Band are to be pierced, in order to leave a Passage for the egress and regrefs of the Air. This Bandage should be applied with Dexterity, taking care not to draw one of the Ends more than the other, lest we thereby set the Nose awry, which is not to be remedied when 'tis once cicatrised in a wrong Situation.

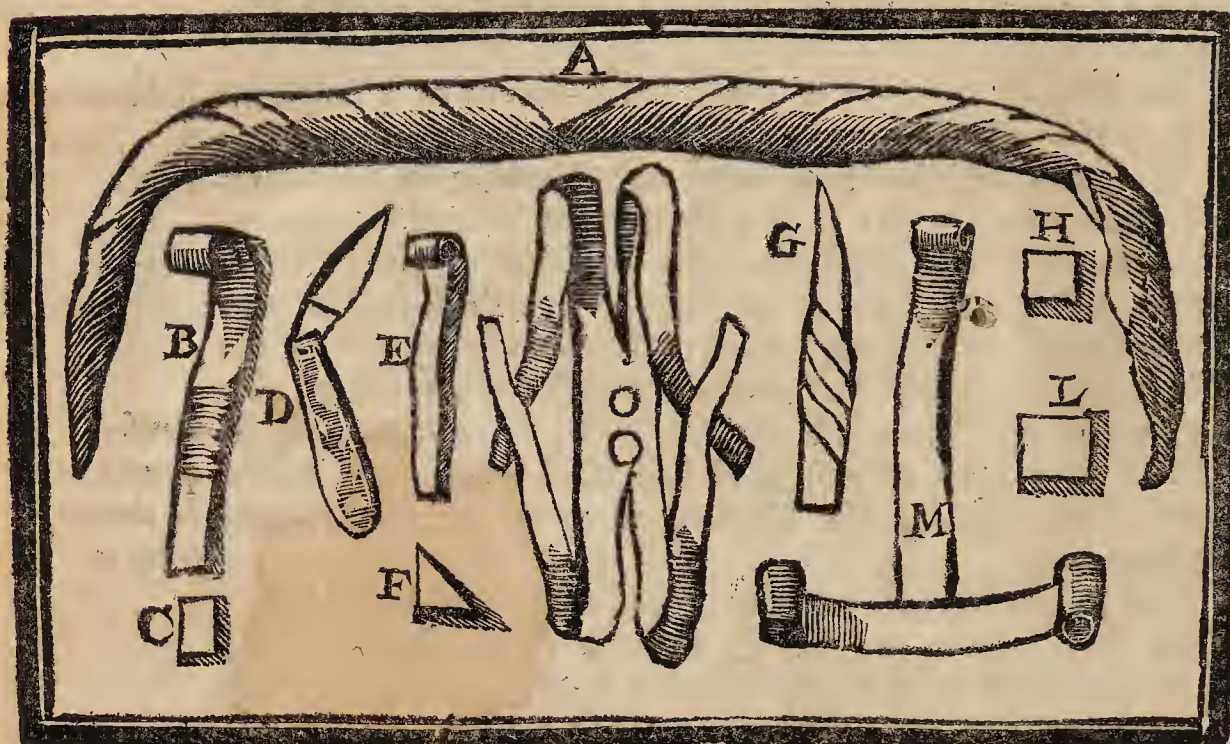
The Wife of a Notary at *Paris* being jealous of a Butcher's Instance to Wife in the *Fauxbourg St. Germain*, which she suspected to this Pur- intrigue with her Husband, went one Morning to the Sham- pose. bles, where finding her at her Stall, after several Reproaches which her Suspicion suggested, she took one of the Butcher's Knives, and gave her a Cut on the Nose, which took it very near quite off, it hanging down holding only by one of the Wings, and a little by the *Columna-Nasæ*, the other Wing being wholly cut off; 'twas instantly sow'd on; it took hold again, Confe- and the Face is but very little disfigur'd: I relate this Instance, quence to in order to embolden the Chirurgeon to do the same on the be drawn like Occasion. from it.

The Judges invented a new Punishment for the Notary's Wife; they condemned her to have a *Flower-de-lis* marked on her Forehead with a burning hot Iron; but the Sentence was not executed, because the King thinking the Sentence too cruel, pardoned her: The Parliament of *Paris* believed it self to be authorised by that of *Thoulouse*, which had condemned to Death a Waiting-woman, for having helped her Mistress to cut off the Nose of a Painter's Wife, excited thereto by a Jealousie which the Mistress had conceived of that Woman; but the Lady, who was a Counsellor's Wife, was saved.

We are not to think that it's possible to make a Nose which is wholly cut off to take again. But yet we are told that some Thieves having in the Night attack'd some Passengers, one of those Rogues receiv'd a cut on the Nose, which took it quite off, and that going to be dress'd, the Chirurgeon ask'd for his Nose, in order to sow it on if he had it; that his Comrades immediately run and cut off the Nose of a Man which they unluckily met with in the way, and bringing it to the Chirurgeon, he perform'd the Suture, by means of which that part was grafted on, and grew to that part of the Robber's Nose which was left, as a Graft would have done a Tree. 'Tis also storied of a Chirurgeon, that he made an Incision in the Arm of a Man who had just had his Nose cut off, that he clapp'd the Bloody part of the Nose into the Incision, and by a Bandage kept it some time in that posture; and that the Nose being stuck to the Flesh of the Arm, the Operator cut out as much of it as was requisite to shape a Nose, and that by this Operation he substituted another in the Place of that

which was lost. But I take these Stories to be Apocryphal, and to be invented rather for Diversion, than to be real Truths.

FIGURE XXXVIII. For BLEEDING of the HEAD.



Of the several sorts of BLEEDING of the FACE.

THOUGH we are to have great Care of the preservation of the Face, and more than any other part, we are yet obliged to submit it to the Chirurgeon's Lancet: The various Diseases which frequently afflict it require frequent Bleeding. We open the Veins and the Arteries; Of the first there are four, which are the *Vena Preparata*, the *Angular*, the *Nasal*, and *Ranular Veins*; and of the Arteries there are two, which are that of the Temple, and that of the Ear.

Description of the Preparata.

The Vein which we see in the middle of the Forehead is called the *Preparata*, it descends in a right Line, from the *Sagittal Suture*, to the middle betwixt the Eye-lids, and receives the Blood which irrigates the Fore-part of the Head, in order to convey it into the external Jugulars, from whence it passes into the descendant *Vena-cava*, to be carried into the Heart: 'Tis this large Vein that we see so much swell'd in those who are enraged, and which appears more in obstinate People than others. When the Physician has ordered it to be open'd, 'tis the Chirurgeon's Business to perform it; and to discharge his Office, he is make a Bandage about the Neck with an Handkerchief rolled up in the shape of a Sausage A, and like that which we have shewn in the bleeding of the Jugular, being careful not

not to prefs the Passage of the Air too hard: He ought to have ready a Band B, and a Bolster C, both as large as those used in bleeding the Arm; the Lancet D, which he is to make use of, is not to differ from that are used in other Bleedings: The Vein being sufficiently swollen or risen, he expeditiously opens it, that he may not keep the Throat too long streighten'd. He ought not to make the Orifice, by striking the Lancet directly in, for fear of pricking the *Pericranium*, which lyes directly under this Vein, but he is to open this Vessel a little a-slant; and when the Point of the Lancet is entered, he is to raise up that Instrument to cut the Skin a little more than the Vein. The Orifice made, he must a little slacken the Ligature about the Neck, to facilitate the Patient's Respiration; but must not loosen it much, because the Blood will not then come: When he has drawn out a sufficient quantity, he wholly takes the Ligature off the Neck, and the running out of the Blood immediately ceases, by reason that it finds its Channel to the Heart open'd. He fixes the Bolster on the Orifice, and the Band over that, binding it around the Head like a Forehead Cloth: It may be taken off the next Day; for of all Bleedings 'tis the easiest cured.

The bleeding of the Angular Vein is not attended with any more Difficulty: We call this Vessel by that Name, because 'tis placed in the great Corner of the Eye; 'tis this Vein which appears betwixt the Corner of the Eye and the Nose, and receives the Blood which is convey'd to the Body of the Eye, and all its adjacent Parts, wherefore the opening of it is prescribed to Patients, and above all in case of Inflammation of the Eyes, to evacuate by the nearest Part the Blood with which all those little Veins are surcharged.

To perform this Operation, we prepare a Band E, of an Ell and half long, to make about the Head several Circumvolutions, which are to be tighter than in other Bleedings, that the Eye may not be incommoded. The Bolster F must be triangular, to accommodate it to the Figure of the Part, and very thick, to fill the whole Cavity of the Corner. We place the Patient on his Seat, and make the same Ligature as in bleeding in the Forehead. We direct the Patient to shut his Eyes, and as soon as we see the Vein appear, open it with the Point of the Lancet, without fearing its slipping from us, it being steady. We are prudently to avoid touching either the *Periosteum*, or *angular Cartilage* of the Eye, which is not far distant from it. The Vein being opened, we oblige the Patient to bow his Head, that the Blood may fall into a little Basin or Porringer, and not run down the Face, as it would if he were allowed to sit upright: For we are not to expect it to flie out of this Vein in an arch'd Stream. The bleeding over, and the Ligature taken off, we wipe the Face, which is always stain'd with Blood, and lay the Bolster on the Orifice. We place the first end of the Band

What to be observed in opening this Vessel.

Apparatus

Manner of opening the Vein.

Dressing

under the Ear on the same side; and running it above the Cheek, it takes in the Bolster, then rolling it aſlant over the Forehead, it returns behind the Head, and under the ſame Ear again, and in this manner is to be continued as many times as the length of the Band will allow: We ſtay it with a Pin where it ends, and leave it on one or two days according as the Patient deſires, or fears that the Orifice ſhould bleed a-freſh.

Of a leſſer Vein to be opened.

Betweenſt thoſe two Cartilages which form the ſmall Ball of the Noſe, there is a Vein which does not appear without, and which the Chirurgeon is obliged to open in ſome Patients: This ſort of *Phlebotomy* is very little practiſed; for beſides that ſcarce any Phyſicians preſcribe it, the Vein being very little, affords but little Blood, and conſequently gives no great Relief to the Patient; we ſometimes, in the School of St. Come, oblige our Candidates to perform this ſort of bleeding in their Maſter-piece; and thus it is to be done. We tighten the Neck as much as is neceſſary to raiſe the Veins of the Head, and take a Lancet G, arm'd or wound about with a bit of Linnen from the middle of its Handle to half way its Blade, as well to gage the length we are to ſtrike it in, as to hold it the more ſteady, and cloſing the Noſe with the Fore-finger and

Precaution

Thumb of the Left-hand, the reſt of which covers the Patient's Eyes, that he may not be affrighted at the ſight of the Lancet, with the Right-hand we lengthways ſtrike the Lancet betweenſt the two Cartilages, the Point mounting upwards, and thruſt it in ſo deep, as that we ſee the Blood come out at the ſide of it, or as far as the Part of it guarded with the Linnen; for we are not to paſs farther, though the Vein ſhould not be opened, which frequently happens, becauſe that being inviſible, this bleeding is performed by chance. If we are ſo lucky as to hit the Veſſel, the Patient is to ſtoop forwards, that the Blood which now ſtreams out, and then iſſues forth drop by drop, as when the Noſe bleeds, may be received in a Porringer: The Neck is no ſooner looſened, than the bleeding ceases, yet we put on the little Bolſter H, and the Band I, pierced at the Place againſt the Noſtrils, and provided with four ends, which we faſten with as many Pins to the Patient's Night-cap. Before the Chirurgeon undertakes this bleeding, he is to tell the Patient and By-ſtanders, that being obliged to prick groping, he will not anſwer for the Succeſs, and that they are not to be ſurpriſed if they ſee no Blood come out.

Dreſſing.

Situation of the Ranula Veins.

The fourth ſort of bleeding on the Face, is that of the *Ranula*; which are two Veins ſituate under the Tongue near the String, the one on the right, and the other on the left. Theſe Veins, after having pump'd the Blood which humectates and nourishes all the Parts which compoſe the Baſis of the Tongue, pours it into the Jugulars. This way of bleeding is more practiſed than the others, becauſe there are more Occa-

sions

sions of performing it, and it tends more to the Relief of the Patients, especially in Quinsies, which are very frequent Diseases. We need not prepare either Band or Bolster, because neither of them are used, no more being requisite than a Lancet wrap'd about with a small Band, which leaves no more than barely the Point uncovered: We make the usual above-mentioned Ligature about the Neck, in order to raise the Veins; and then having opened the Patient's Mouth, and raised the Tongue near the Palate, we easily discover these two Veins, by reason they are superficial; and with the Lancet G we open one of them, and pierce the other almost at the same time before the Patient has let his Tongue fall: We then lean the Head forwards, that the Blood may run out of the Mouth into some Vessel set on purpose to receive it, that we may be able to observe what quantity we take. We open both the *Ranula*, by reason that they not being very large, one alone would not afford a sufficient quantity of Blood to relieve the Patient, who is sometimes near being suffocated by the abundance of that Humour which gathers at the Throat. When we take the Ligature from the Neck, the bleeding stops, and after raising the Patient's Head, we are to rinse his Mouth first with *Oxycratum*, that is, Vinegar and Water, and then with warm Wine, which will not fail to stop the Blood: But if some drops drain out, we need only press the Tongue down, and leave it at Rest a little while without any Motion.

How to open them.

What to be done after.

Arteriotomy

Arteriotomy is practised on no other Part but the Head: The Word is derived from *Arteria* an *Artery*, and *Terein* to cut, by reason that this Operation consists in opening an Artery, in order to draw out the Blood which it contains. The Reason why this Operation is performed on the Head only, and on no other Part, is, that the Skull being a hard Body, situate under an Artery, we may, by pressing it with a Bolster staid by a Band, easily stop the Blood, which is not practicable with the same Facility on the other Parts of the Body, the Flesh being incapable of making the same Resistance with the Skull. We open the Artery in two Places, one of which is on the Temple, and the other lower, near the Ear, a little distant from that Eminence which we call *Hircus*, because the Hairs which grow on it resemble those of a Goat: These sorts of Bleedings are not performed on light Occasions, they must be prescribed by the Physician, or authorized by a pressing Exigence, as when we see no other way of saving the Patient's Life, as in Apoplexies, in which bleeding in all other places has prov'd ineffectual to the reviving of the Patient. The Ligature made use of to swell and raise the Veins would in this Case hinder the Course of the Blood into the Arteries, wherefore 'tis not to be used; we are only to place the Patient's Head lower than the rest of the Body, that the Blood may the easier settle there.

Of ARTERIOTOMY.

Places where we open the Artery.

We make use of the common Lancet, with which we bleed on the Arm: The Chirurgion puts it into his Mouth half folded; and after having discovered the Artery (which is known by its Pulsation under his Finger) and the Place which he thinks most proper, he marks it with his Nail, where he opens it by Puncture and Elevation, as in bleeding in other Parts: The Blood flies out in an arch'd Stream continually springing. These sorts of bleeding are somewhat larger than those in the Veins, if the Patient's Strength permit it: In order to stop the Blood with the greater Security, we lay on the Orifice one half of a Garden-bean on the flat side, above that the Bolster L, a Band M, which we carry round the Head, and close a little tighter than ordinary. In case of the want of a Bean, we usually clap a Liard into the Folds of the Bolster, that the Artery being flattened betwixt two hard Bodies, may force the Blood into another Channel, whilst the Vessel closes and heals like a Vein, provided it be left thus bound for three or four Days: The Band is shaped like a T, so that the Branch which we place on the top of the Head, may hinder the circular ones from displacing it. But to confirm what I have already said with regard to this Operation, being very rarely perform'd, in the Year 1681, being with the King at *Lisle* in *Flanders*, the Court-Physicians ordered me to open the Artery of an Officer under the Marshal *de Humieres*; the Chirurgions of the City seem'd very much surprized to see it performed, and assured me, that they were so far from ever having seen it done, that they never so much as heard of such an Operation.

FIGURE XXXIX. For the HARE-LIP.



THis Deformity, in which the upper Lip is cleft, was by the *Greeks* call'd *Colovoma*, from *Holovein*, to diminish or rasion for shorten, and by the *Latins* *Mutilatio*, in *French* and *English* *HARE-Mutilation*; this Word is equally proper, with regard to the Lips. Ears and Nostrils, when they are in any measure defective; but when the Deficiency happens only to the Lip, 'tis called a *Hare-lip*, from its resembling the Lips of that Animal, which are cleft in this manner.

The Lips may be cleft two ways, either by *Accident*, as by a Blow, a Fall, or a Wound on that Part; or *Naturally*, when it comes into the World with the Patient.

The Lips are very often wounded by the Teeth under them; for they being hard Bodies, firmly fix'd in their Places, and leaving a void Space betwixt them, 'tis impossible for the tender Lips to receive any hard Blow, without being slit as if they were cut with a Knife: These Wounds are no otherwise to be cur'd than by Suture, by reason that we cannot dispense with the Motion of this Part, either in speaking, or the Re-

*How to
sew it up.*

ception of any Nouriture: The Suture is to be performed with utmost Expedition, because the Wound being in such a spongy and moist Organ, would otherwise be increased by this Motion. When the Suture is made immediately after the Receipt of the Blow, we may spare the use of either the threaded or implicated Suture, which, by reason of the Needles left in the Wound, incommode it: But the intersected Suture will then serve the turn, performed in the following manner. We are to take the curve Needle threaded, marked A, and by the help of the small Pipe B, pass it through from without inwards; and then again from within outwards, taking up enough of the Flesh to fix and fasten the Suture: We are next to tie together the two Ends of the Thread on one of the two small Bolsters CC, on the side of the Wound, and to take two or three Stitches pursuant to the length of the Wound, cutting the Threads of each Stitch beyond the Knots, and covering the whole with a small Pledget charged with an agglutinating Balsam, together with a Plaister and Bolster, which are to be fastened and secured by an incarnative Bandage.

When the Mutilation is natural, the Child being born with its Lip cleft like that of a Hare, or when in a Campaign Wound, through the Neglect of re-uniting and sewing up the separated Parts, they cicatrise at a distance from each other, the Chirurgeon is not then to hope to succeed by the tortile Suture: Because that in this Case always wanting proper Matter, either by reason Nature has not furnished it, or that the cicatrising has so hardened the edges of the Wound, that he is forced to cut it, in order to renew it, and make way for the re-closing and agglutinating them; if he should not leave the Needles in, 'twould be impossible to keep the Wound subject, and its Lips would separate from each other, on occasion of the least Motion. Let's now see what is to be done before, during, and after the Operation.

*Of the
Cure when
old, or na-
tural.*

Before the Operation, we are to examine the Constitution of the Hare-lip; for if the two edges are so widely separated from one another, that we think it impossible to get them together, we are not to try the Operation: We are then to have regard to the Age of the Child, and not to put it in Practice before it reach the Age of five or six Years; for a sucking Infant, or one which cries very often, is not in a Condition to undergo this Operation, which requires Rest: The Child must be of an Age capable of Reflection, and of being sensibly touch'd with the Indisposition with which 'tis afflicted; and knowing that must desire a Cure, and resolve to suffer all possible Endeavours to obtain it: For should the Chirurgeon attempt it before then, 'twould be impossible for him to succeed, by reason that the Child's Lips are neither thick nor solid enough to sustain the Needles necessary on this Occasion. But if the Patient's

tient's Age and Mutilation allow a re-union of the divided Parts, we are to dispose the *Apparatus* as you see represented in the XXXIXth Plate, and then to seat the Patient in a Chair turn'd to the Light, and lean'd backwards in such manner that the Blood don't fall into the Mouth: We are to rest his Head well, and a Servant which is to stand behind him applying both his Hands to the Cheeks of the Subject, is to force the two Edges of the Wound as close as he can, in order to facilitate the Suture.

During the Operation, the first thing the Chirurgeon is to *Useful Observation.* do, is to examine whether the Lip does not stick to the Gum; which if it does to any part, it must first of all be separated by the Incision Knife E, the Operator taking care that he does not anticipate the Operation, by touching with the Knife either the Gum which would uncover the Jaw-bone, or the Lip, because that rendring it thinner, 'twould make the Closure more difficult. This Caution duly observed, we are with *Manner of operating.* the two pair of Pincers FF, to pinch the two Edges of the Hare-lip, fixing these Instruments one after another in such manner, that whatever we desire to retrench from these Edges pass beyond the Pincers, which we are to close, pushing the Ring of each of them towards the upper Extremity; then with the Scissars D, or the Incision Knife E, according as we find most convenient, we are to cut off these Edges, in order to make a fresh Wound, renewing the old one to the bottom, for where-ever any of the old Scar remains, the re-union can never be made. The Pincers being removed, we are to let the Wound bleed a little, then having dry'd it, we take one of the straight round Needles G G, which we run through the Lips of the Wound sustain'd by the short small Pipe B; to the second Needle which we pass is fix'd a Thread, which we turn around these two Needles, and wind across from the one to the other, forming in the middle a St. *Andrew's Cross*, and flattening the Edges of the Wound by these Means, we approximate them to one another. We are to pass the first Needle through the lower end of the Wound, that we may not leave at that Extremity a longer end of the Hare-lip than the other; and the second Needle is to be placed betwixt the first and the Nose. The Thread well wound about and fastened, we cut *Application of the* off the Points of the Needles, if too long, with the Incisory *Needles.* Pincers H, and lay on the flat Bolsters II, as well over the Heads as Points of the said Needles, that the Skin may not be raked or hurt by the Bandage, which is to fasten on, and retain the whole fix'd in this Posture.

After the Operation, the next thing to be done, is to dress *Of the Dressing.* the Wound in such manner, as to answer the Chirurgeon's Intention. If we have been obliged to disjoin the Lip from the Gum, we are to thrust a little Linnen Rag betwixt those two Parts,

How to ap-
ply the Ban-
dage.

Parts, that they may not re-unite : We are to lay on the Wound the Pledget K, covered with white Balsam of *Peru*; then the Plaister L, cut and dented to accommodate it to the Part, over that the Bolster M, of the same Figure; and lastly the Bandage N, provided with four Ends; and when fix'd call'd the Sling, from the Resemblance it bears to that Machine: We apply the middle of the Band to the Wound, taking hold of the two upper Ends, which passing directly over the Ears, make a circular Turn about the Head, and then taking the two lower Ends, we refold them in the middle under the Lip, that mounting them above the Temple, we may fasten them to the Cap. Having put the Patient to Bed, we oblige him to a strict Rest, and order his Broths and Drink to be given him through a Pipe or Funnel, that he may move his Lips as little as possible.

How to fi-
nish the
Cure.

The second or third Day we take off the *Apparatus*: If the Thread was too hard, we are to slacken it a little; and if too slack, we are to tighten it: We again lay on the same Pledget cover'd with white Balsam, and are to take care to change the Linnen Rag betwixt the Lip and the Gum every Day: We continue in this way of dressing 'till the ninth or tenth Day after the Operation, which is the ordinary Term of taking out the Needles. Then we gently unwind the Thread, and dextrously draw them out, resting our Fingers on the Lips of the Wound, to avoid their separating again: After this we lay nothing on the Wound, besides a Plaister of *Diachalciteas* to dry it, and make use of this Remedy 'till 'tis entirely cicatrised; over the Plaister we fix the incarnative and uniting Bandage, which is very serviceable at the end of the Cure.

Theve-
nin's Ad-
vice in two
Particulars

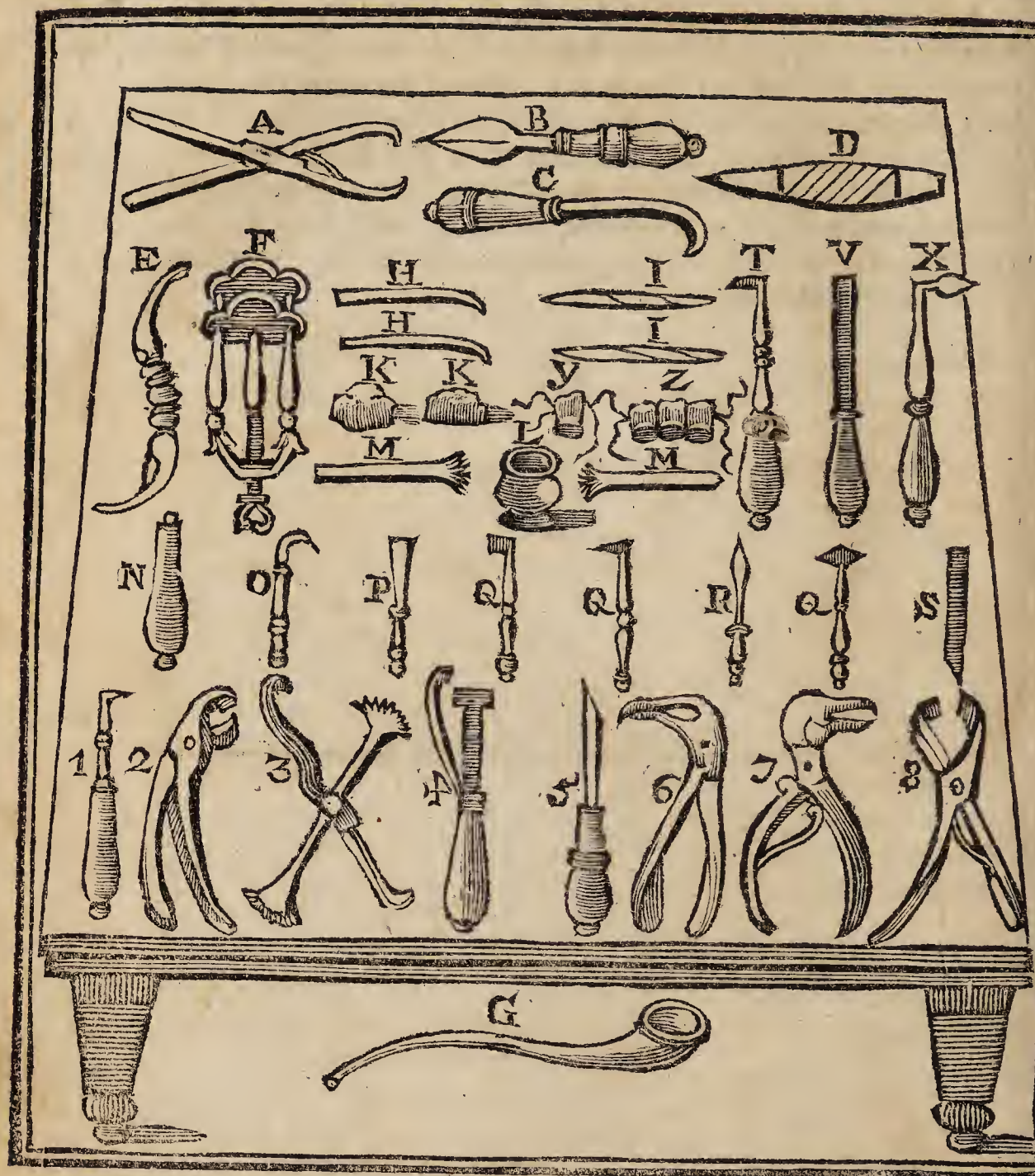
Thevenin proposes two Things, with regard to this Operation. The first is, that when there is a Loss of Substance, which separates the Edges too widely from one another, we make two longitudinal Incisions in the Skin, in the form of a Crescent on both sides of the Hare-lip, in order to allow it to lengthen it self: But this Expedient is not to be admitted, by reason that these new Wounds only augment the number of the Scars. The second Advice which this Author gives us, which tends to the sparing nice, tender and timorous Persons the Pain of Incision, is to provide, with a Bolster, the under part of the Lip, and to touch the Skin betwixt the Lips of the Wound with a pair of Pincers, wetted in Oil of Antimony, or in some melted Cautery which may ulcerate and carry off this Skin which is to be removed; and the Scar being fallen off, we are to run the Needles, and wind them about with Thread, as above; but the Incision is more secure and expeditious.

An Officer's Lady being deliver'd at *Versailles*, sent for me to see her Child, which was born with a Hare-lip; I enquired of her

her whether during the time of her Pregnancy she had not Observati-
 look'd intently on a Hare, and she told me that in the beginning on concern-
 of her Time she was presented with one which hung in her ing this
 Window, and for sometime she fix'd her Eyes on it: I advis'd her Disease.
 to put the Child out to Nurse, by reason it was too young to
 bear the Operation, which it ought to stay for 'till it comes to
 be four or five Years old, and that then she might do what
 was necessary; but it dy'd in three Years. I have perform'd
 it on another Child at Versailles, which I oblig'd to stay to
 that Age, and cur'd it, nothing remaining but a very light Scar,
 which very little disfigur'd it.

FIGURE

FIGURE XL. For the GUMS and TEETH.



Operations **T**WO Diseases which happen to Gums require manual Operation in order to their Cure; the first of these In-
 practis'd on the Gums dispositions is call'd an *Epulis*, and the other *Parylis*.
 and Teeth; *Epulis* is a Greek word deriv'd from *Epi*, which is *without*,
 and first on and *Ouli*, a Gum, it being a fleshy Excrescence which issues
 the Gums. out of the Gum, and which proceeds from an Excoriation, or
 supervening Ulcer on that Part: These carneous Excrescences
 are soft and whitish, participating of the Nature of the *Polypus*;
 or else they are hard and reddish, participating of the Nature
 of a *Scirrhus* or *Canker*: They first result from a pituitous and
 flegmatic Blood, and are free from pain; the other, which are
 engender'd

engender'd by a melancholy and black Blood, are always painful.

The Operation is absolutely necessary to remove these Ex-*How to ope-*
crefcences, by reason that we cannot make use of Caustics in *rate.*
the Mouth, consume them with Unguents, nor burn them
with the actual Cautery. We are then to take hold of them
with the Pincers A, in order to hold them fast, whilst with the
other hand with the Pen-knife B, we cut them off as near the
Gum as possible, without uncovering the Jaw-Bone: The
curve sharp-edg'd Instrument C is very proper to cut off this
Flesh. Some Authors advise us to touch the place where the
Excrefcence was cut off with a red hot Instrument call'd a Fire
Button, the heat of which is to dry up the Roots of the Indif-
position: But that is needless, it being sufficient to rince the *How to hin-*
Mouth with warm Wine, and to keep on the Wound a little *der a Re-*
bit of Linnen dipt in Wine and Hony. If the Roots begin to *lapfe.*
shoot out again from the Flesh, we are to touch them with a
bit of Vitriol, or with the *Lapis Infernalis*, as many times
as we think proper; and then endeavour to Cicatrize the
Wound.

Parylis is deriv'd from *Para*, near, and *Ouli*, a Gum. This *Of the Pa-*
Disease is an Inflammation of the Gums, which frequently *rylis.*
tends to Suppuration: 'Tis almost always caus'd by a rotten
Tooth, which by its painful Irritation determines the Humour
to flow to this part, where the gather'd Fluids easily digest and
grow to an Abscess, which is forwarded as well by the moist
heat of the Mouth, as the subtilty and tenderness of the Fibres
of the Gums. These Fluxes swell the Cheek and the Lips, and
give the Patient great pain before they come to an Abscess.
We favour this Digestion by obliging the Patient to hold in his *Cure.*
Mouth warm Milk, and applying to the Gum one half of a Fig
roasted on the Coles. As soon as with our Fingers we feel the
Fluctuation, we are to open it, lest the Matter by its continu-
ance should purifie the Jaw-bone.

To this end we take a bleeding Lancet D, which we guard or *Manual*
wind about with a little Band, in order to hold it the firmer in *Operation.*
the handle; and the Chirurgeon having put it into his Mouth,
with both his Hands extends the Lips, to observe the place of
the Tumour, which is very often situate near the *Dentes molares*,
betwixt the Gum and the inside of the Cheek; then in his
Right-hand he takes the Lancet, which he plunges into the
middle of the small Eminence form'd by the contain'd Matter,
which follows the Instrument when he draws it out: We
squeeze the Tumour a little in order to empty it, and give the
Patient some warm Wine to rince his Mouth, which he is to
continue doing from time to time for two or three Days.

When these small Abscesses come on the upper Gums they *Cure in the*
heal better, because the Orifice which we make gives room for *upper Gum.*
the morbid Matter to empty it self by its own weight, and as fast

as any new forms it self, so that it cannot there occasion any disorder. But when they happen to the lower Gums, the *Sanies* remains as in a Purse, and by its stay may putrifie the Jaw-bone at the bottom, as I have several times seen happen; which we prevent by opening the Abscess in time, afterwards frequently squeezing it, thrusting the *Pus* upwards in order to force it out at the Orifice, and laying on the outside of the empty Purse a Bolster and a Bandage, which closing that space hinder any Matter gathering there again: But if, notwithstanding all these Precautions, the Bone is yet uncover'd and putrify'd, 'tis difficult to procure its Exfoliation any otherwise than by the Application of the Fire-Button, which yet we are not to make use of 'till we find this Bone, which is accounted one of the hardest in the whole Body, has baffled all other Means.

Operations
practis'd on
the Teeth.

The Teeth alone at present furnish the whole Employment of several Persons call'd Operators for the Teeth. It must be own'd that these Gentlemen, the sole Object of whose Labour are these Parts only, may excel in their Art, rather than the Chirurgeon, whose Science is of an infinite Extent: But yet he is not to neglect this part of Chirurgery, in which he is to be acquainted that seven sorts of Operations are practis'd. The first is the opening or widening the Teeth when they are set too close together; the second, to cleanse them when they are foul; the third, to hinder their Rotting; the fourth, to stop the Holes which grow in them; the fifth, is to file them when they are too long and jagged; the sixth, to pull them out when Rotten; and the seventh, to substitute artificial ones in the place of the natural.

Of the clo-
sing or shut-
ting of the
Teeth.

Someties the Teeth so close themselves, that 'tis impossible to open them to take in Food. This Accident may succeed either a Wound, or an Abscess on the *Parotides* suffer'd to scarifie, without having put a small Gag betwixt the upper and lower Teeth, to keep them at a sufficient distance from each other: The obstinacy of a melancholy Child which will not open its Mouth, and the Convulsion of the Muscles which serve to raise and lower the lower Jaw may also be the Causes of this Irregularity, which the Chirurgeon is to endeavour to remedy, by thrusting betwixt the Teeth the Levitor E, with which he is to endeavour to separate the upper from the lower row, in order to incert into the space made by the mention'd Levitor, the other Instrument F, which being once fix'd will force the Jaws to open, and separate from one another, when he comes to turn the Screw which runs along the middle of this Engine: The Operator is to turn it gently, lest he offer thereby too much violence to the Parts. The Teeth being open'd, we give the Patient Food, and in taking away this Dilator, introduce in its place a Gag, which we leave there, that they may not return to their former Posture. If 'tis impossible to open the Teeth, we ought to break one of them, in order to get in the

end

end of the little Horn G, by the interposition of which we give him his Nourishment, and prevent his dying of Hunger; or else endeavour to force Broth into his Nostrils: Others advise the giving of nutritive Clysters. In 1702, amongst the wounded Men which we had in the Canonading of *Nimeguen*, which were carried to *Cleve*, there were seven or eight who by convulsive Motions had their Teeth shut so close, that we could not open some of them, and they dy'd: There were two or three which we gagg'd after having open'd their Teeth, and they recover'd.

'Tis so common to clean the Teeth, that it seems not to deserve the particular Application of a Surgeon: 'Tis true indeed, every Body usually after eating picks their Teeth with the Tooth-picks H H, or the Quills I I, common cleanliness obliging them not to fail, because there remains betwixt the Teeth some particles of the Meats, which, putrifying there, occasion a stinking Breath. We should also wash our Mouth every morning, and with one of the small Sponges K K rub the Teeth, to clear off the foulness which gathers on them, and preserve them in their natural whiteness: But how careful soever we are, near the Gums there yet grow thin Crusts which render the Teeth yellow, and within-side there grow certain Shells so hard, that they require strong Instruments to disengage them from the Teeth; wherefore those who are curious of their Mouth, from time to time have recourse to those whose daily practice 'tis to clean Teeth.

Dexterity is no less necessary in this than in many other Operations, those who have tender Mouths, and particularly the Ladies, cannot bear rough handling, but are for gentle and neat means. Wherefore the Left-hand, with which we depress the under Lip or raise the upper, is to be wrapped in a fine clean piece of Linnen: If the Instrument which we are to use is of Iron, 'tis also to be covered with Linnen for neatness; Then the Operator having plac'd the Patient with her Face turn'd towards the Light, and seated her on a proper Seat, he places himself a little on one side of the Patient, and kneeling on the Ground on one Knee, in order to operate the more commodiously, runs through all the Teeth one after another, and alternatively makes use of several Instruments according to his present intention, avoiding as much as possible the making the Gums bleed. When he thinks he has taken off all the Crusts and Scales, he makes use of an Opiate L, with which he rubs all the Teeth with Marsh-Mallow Roots M M, prepared and bristled at the ends: He immediately causes the Patient to wash her Mouth several times with Water, and then the Operation is finished. 'Tis customary for these Gentlemen to make a present of a Root, and a small Pot of the Opiate, to those who are so Civil as to pay them well.

Of the Instruments
us'd.

The proper Instruments for cleaning of Teeth are contain'd in a Case, because they are small, and being numerous they are screw'd on the same Handle N, according as we have occasion to use them: There are of several Figures, some are made like a Shooing Horn O, to go betwixt the Teeth; others like a Blade of a pair of Scissars P, others like Scrapers Q Q Q, the third resembles a Graver R, and others a File S; they are commonly of Steel, but those used to the King and the Princes are of Gold: And if there were yet a more precious Metal, we should employ it in their Service, because they reward us so magnificently.

Several
Expedients
against
that Putrefaction.

To undertake to keep the Teeth always well, and succeed in it, is no easie task: The Operator who is rash enough to promise it, can frequently scarce keep his word. There glides along the Fibres at the Root of the Teeth a sort of corrosive Serosity not unlike *Aquafortis*, which undermines it by little and little, and sometimes does not quit it 'till it has made it fall out by bits; if we could force this Humour into another Channel, the Teeth would be preserv'd during the whole Life: All we can do is when they begin to rot, to hinder the *Caries* from augmenting and making farther Progress. If the *Caries* is visible, we are to scrape it off with the Scraper T, and if betwixt two Teeth, we may make use of the File V, to clear it of its blackness: If the hollow place be at the top of the Tooth, it is to be cauteris'd with Oil of Sulphur or Vitriol, a little drop of which we convey into the rotten Tooth, with one of the little Pincers used in Miniature; and if the rottenness augments, the Operator tries to stop it by cauterising it with the little actual Cautery X, which being heated with it he touches the whole Cavity of the Tooth; and lastly, if the Putrefaction augments, and the Pain becomes insupportable, there is no other remedy than to pull it out.

The fourth Operation practis'd on the Tooth, is to stop the holes which want it. It frequently happens that by a Settlement of Serosities in a Tooth, it grows hollow, and that the hole ceases to augment after the Flux is over: Though most of these holes are not painful, they are yet very incommodious, by reason that every time the Patient eats they fill with the Aliments which ought to be pick'd out after the Meal is over, which is no easie thing when they are gotten into such places where we cannot reach them with common Instruments. Some People cannot drink any thing cold, because if a drop of cold Drink should enter the Cavity of the Tooth, it would put them to such a sharp pain as would force them to cry out; these Persons are depriv'd of the pleasure of drinking with Ice: There are others whose rotten Teeth make their Breath stink, and who are oblig'd to chew a little Anise or Cinamon to correct this Indisposition, which is no small one, since they cannot talk near with any Person, without striking them with it.

it. To remedy all these Incommodities, the Operators hunt after ways of stopping the hole of the Tooth : Some affirm, that it may be filled with Leaf Gold and Silver ; but these Leaves, being subject to break, cannot long stay in : Wherefore we should rather make use of a bit of beaten Gold or Silver, to which we have given the form of the hole which 'tis to stop. Some prefer Lead, because that being more pliable, we force it in, and fill the Cavity easier than with any other Metal, making no more Alteration in the part than Gold it self would. Others, without taking so much Pains, stop these Holes with Wax, which answers the same end, preventing the Meat and Drink from entring and excavating it more.

The fifth Operation which concerns the Teeth, is Filing ; which is practis'd in three different cases, viz. to separate them when they grow towards one another ; to level them when some of them grow too long ; to even and polish them when their points turn inwards, and grate against the Tongue, or grow jagged outwards, and prick the Cheeks. On all these occasions we make use of the small File V, provided with a handle that we may hold it the more steadily, it must be very fine, that it may not shake or loosen the Teeth, and tho' we don't make such a hasty progress as we should with a course File, 'tis yet better to go on more slowly. The Operator is to sustain with one or two of his Fingers the Tooth on which he is working, to prevent its breaking or splintering whilst he is Filing it. When the Operator is to separate the fore Teeth, he is to take care not to File one more than another, that the spaces betwixt them may all be equal : 'Tis labour lost to File a too long Tooth when that opposite to it is wanting, at least unless we continue to do it from time to time, for 'twill continually shoot out beyond the rest, it being a certain Truth, that the Teeth grow in order to repair their continual wasting by their mutual rubbing in Mastication ; which Experience proves in those who have had a Tooth fallen out, for that against which it shou'd rest, grows longer, and shoots into the vacant space left by the lost Tooth. The *Dentes Molares*, or Grinders, have sometimes points, as well when their Substance remains sound and entire, as when they come to putrefy, or when some part of them are splinter'd off. When these superfluous shootings out either prick the Cheek, or grate the Tongue, they are to be fil'd off, in order to remove all sorts of roughness ; and this is to be done gently, and with the ordinary Care which is taken by those who follow this sort of Practice.

The sixth Operation which the Teeth require, is the drawing of them, and is the most common of them all, being what we see daily practis'd. There are very few Persons who have not one pulled out ; and some are so impatient, that on

the least Pain they feel, they cause their Teeth to be pulled out; but 'tis a pernicious Custom to post so hastily to the Tooth-Drawer. It frequently happens, that the Pain goes off in a small time, and that the Patient repents that such a light uneasiness has cost him a Tooth; we are not then to proceed to this Operation before the Tooth is so putrefied, that there are no means left to save it, or the Pain which it excites in the Gum is become continual and insupportable; but those who draw their Teeth as often as they feel any Pain, soon unfurnish their Mouths, and afterwards find themselves at leisure to repent their Rashness.

*In what
Cases, and
how to be
perform'd.*

But yet there are five or six Cases, in which we cannot dispence with this Operation; First. In Children, when their first Teeth, which are call'd the Milk Teeth, are inclin'd to fall out, when as soon as they are loose, we are immediately to draw them, which is done with an end of Thread wound about the Tooth, with which, after the knot is fix'd, we pull it out. Pursuant to the Popular Notion, the sooner we pull out this Tooth, the streighter its Successor grows; this Opinion is not too well grounded, but yet these Teeth shou'd always be pulled out, because they must fall of themselves, and if the Chirurgeon opposes it, and the second Tooth grows amiss or awry, the Mother is sure to lay the blame on him, and never forgive him; so much are Women prejudiced in favour of vulgar Errors.

*How to
fasten loose
Teeth.*

Secondly, When they loosen very much of themselves, without being shock'd by some Blow, or an attempt to break or bite some hard body, for in this last Case we are not to draw them; but on the contrary we are to endeavour to fasten them in their *Alveoli* with Astringent Wine, with which we fill a Sponge, which we are to hold to the Gum, which Application is to be frequently renewed, and the Patient forbidden the chewing on that side, where rest is very necessary to give time to these parts to fix themselves; but if the Tooth is so loose that no hopes are left of preserving it, and the Patient incommoded in Eating, 'tis to be pull'd out, to perform which we need only turn it from one side to the other, and raise it with our two Fingers without the use of any Instrument, especially in old People, who thus loose all their Teeth one after another.

*Case where
the extra-
ction is dif-
ficult.*

Thirdly, When the Tooth is so rotten, that the Top or Table of it is almost consum'd; when if we delay Drawing it, 'till the whole is near wasted, there being no hold left for the Instrument, 'twill prove very difficult to disengage its remains; wherefore 'tis advisable to dislodge it from a place where its continuance must very much incommode the Patient. To draw out the Teeth which are firmly fixed in their *Alveoli*, are requisite such Instruments as are capable of seconding the Effort us'd in these Extractions; such are the Pelicans, and other

Teeth-

Tooth-drawing Instruments, which I shall presently shew you.

Fourthly, When a Tooth is broken, and no more remains *Pain inevitable.* but the Root, or it's consum'd, and only a small fragment of the root is left, in these Cases the Operator is to shew his Ability; and on these Occasions 'twou'd be ridiculous not to promise to hurt the Patient, for 'tis impossible to come at a bit of Tooth which lies deep in the Gum, where there is no hold left, without Pain. But most of this sort of Operators are at no great trouble to make good the Proverb, *He lies like a Tooth-drawer.* The Chirurgion is then to apply his whole Industry to get out the rest of the Tooth, and to make use of a Punch if the fragment jets out a point above the Gum; or of a pair of Crows-Bill Pincers, or of another sort called the Dogs-Snout Pincers.

Fifthly, When the Teeth grow outwards, they are to be *Teeth drawn out;* for the Tooth which thus grows out of its Rank *which grow very much incommodes the Person to whom this misfortune outwards.* happens, and occasions a deformity which shocks all who look on him. If it doth not jet out very much beyond the other Teeth, the superfluous part may be fil'd, or cut off with the Incisive Pincers; but if the Table which ought to incline inwards is turn'd outwards, and the Tooth comes forwards, the Patient had better want a Tooth, than have one to disfigure him; wherefore 'tis to be drawn out with such Instruments as the Operator shall think fit.

Sixthly, When there grows a supernumerary Tooth; for *Supernumerary Teeth.* we very frequently find a Tooth jet outwards or inwards in the upper or under Jaw, which is neither of the number of the rest of the Teeth, nor does it grow like them: Some People have several superfluous Teeth, and others a double row; the Fortune-tellers prognosticate a thousand Felicities to those to whom this happens; but for my part I take it to be an unhappiness to be often better stocked with Teeth than Victuals, to be pester'd with too many Teeth, and be forced to suffer cruel Pains to draw out this Natural Favour on which they are complimented. The Duke of *Berry* at the Age of eight Years *Observation.* had a supernumerary Tooth, which he did not need to proclaim his Happiness, being a Son of the greatest King in the Universe, and being in his own Person richly stor'd with whatever can render a Prince accomplish'd; so that, what according to our present Soothsayers ought to predict a future Happiness in another, proved a real misfortune to him, necessity obliging the drawing of it, and consequently forcing him to endure a Torment which is unavoidable on these Occasions.

The Instruments us'd in this sort of Operation are numerous, by reason all sorts are necessary, pursuant to the various sorts of
Z 2 Teeth

Teeth to be drawn; and those which follow we cannot be without.

Of the Tooth Lancet. 1. A Tooth-picker, or Lancet, called in Latin *Dentiscalprum*, and in Greek *Pericharakter*, from *Peri*, about, and *Charassein* to Scarifie, or Cut, it being the Instrument with which we disengage the Gum around from the Tooth which is to be drawn.

Of the Tooth Forceps. 2. A Tooth Forceps, call'd in Latin *Denticeps*, or *Denticulum*, is a sort of Pincers whose end which grasps the Tooth is crooked, and cleft like a Fork, in order to take the faster hold: It may be us'd as well to the upper as lower Teeth, and is one of the most Ancient Instruments in Chirurgery, and has been used in all Ages.

Of the Pelican. 3. A Pelican, called by the Latins *Pelicanus*, from the resemblance it bears to the Bill of that Bird, and by the Greeks *Odontagra*, deriv'd from *Odous* a Tooth, and *Aggrain* to pull out, because being an Instrument consisting of several Branches fix'd by a Screw on the same Spring, is proper to draw Teeth; the two ends of the Spring are a little circular, that they may the better fix on the Root of the rotten Tooth; and of the two Branches one is streight, and the other bent, each of them having their particular use in different cases.

Of the Levitor, a new Instrument. 4. A sort of Levitor E, shap'd like a Leaver, with one end flat to rest on the Gum at the bottom of the Tooth, and the other bent like one of the Branches of the Pelican to take hold of the Tooth. These two Branches are mounted on a handle; when one of the lower Teeth, is fixed on by this Instrument, we need only press down the handle to draw it out of its place: This is the most commodious of all the Instruments, and was lately invented, and I never saw any Practitioner use it besides Monsieur du Bois, who has the Cure of the King's Teeth.

Use of the Pelican. 5. A Punch call'd by the Latins *Impulsorium*, is an Instrument whose end is cleft like a Hind's-foot: 'Tis provided with a handle, that it may be held the faster; 'tis us'd to the Incisory and Canine Teeth which have but one Root, in order to shove them out of their *Alveoli*, and to broken fragments when they can come at them.

Nature of the Risagran. 6. A Tooth-root Drawer, describ'd by Guilleman, and call'd in Greek *Risagra*, and commonly *Risagran*, from two Words, which, together, signify to eradicate. 'Tis a sort of Forceps whose ends are almost sharp pointed, in order to enter the *Alveolus*, and lay hold on the remainder of the Root of a Tooth which is left behind: This Instrument is very necessary to Tooth-drawers.

Use of two sorts of Pincers. 7. A pair of Forceps call'd from its shape a Crows-Bills; it serves to extirpate the remaining bits of the Roots of Teeth, and cut off the extremities when they are too sharp.

8. A pair of Incisory Pincers with which we cut the Table of the Tooth which shoots outwards, and which exceeds the ordinary size of Teeth.

'Tis not enough, that the Operator is acquainted with the *Situation* use of these Instruments; but he must also handle them dex- *of the Pa-*trously, and use them on proper Occasions. The Patient *tient.* whose Tooth is to be drawn, is to be seated on the Floor on a Cushion only: The Operator is to place himself behind him, *Manner of* and having fix'd his Head betwixt his Thighs, causes him to lift *Operating.* it up a little; the Patient's Mouth being open, he observes the rotten Tooth, that he may not mistake one for the other; then with the Tooth or Gum-Lancet, he is to separate the Gum from that Tooth, which he then grasps with the Instrument which seems to him most proper, which he is to fix, in order to draw out the Tooth. If the Operator succeeds, the Patient stooping spits out the Tooth with the Blood which gushes out of the Gums, some Spoonfuls of which he is to suffer to run out before he gargles the Mouth with *Oxycratum*, i. e. Vinegar and Water: He then with his two Fingers squeezes the Gum where the Tooth came out, in order to approximate the separated parts, and then continues the use of *Oxycratum*, or warm Wine for the whole Day.

What to be done after the Operation.

This Operation consists barely in an Effort of the Wrist, in order to pull out the Tooth; this Effort is to be redoubled when the Tooth resists it, and the Operator is not to give over 'till the Tooth is out; for which reason those Chirurgeons who are daily very much engag'd in the Practice of Bleeding, and are willing to preserve a steady Hand, never ought to meddle with Tooth-drawing, lest the straining Efforts which that Practice obliges them to, shou'd make their Hands shake: We shall then leave this Employment to those Operators which make it their daily Practice, and have no other Trade to get their Living.

If I advise the Chirurgeon to abandon this, 'tis not only by reason of the prejudice which may accrue to his Hand by it, but also, that it seems to favour of the Buffoon and Mountebank. Most of these Tooth-drawers, abusing their Talent to impose on the Publick, pretend that they want nothing besides their Fingers, or the end of a Sword, to pull out the deepest rooted Teeth; but the Chirurgeon is to scorn these Feats of Activity, and as Probity ought to be the rule of his Actions, he must distinguish himself from those whose aim is to deceive others.

The seventh and last Operation perform'd on the Teeth, is *For the* the inserting of Artificial ones in the place of those which are *inserting of* lost. Two Reasons are alledg'd to Authorize this Practice: *Artificial* The first is drawn from the Ornament which they afford, it *Teeth.* being a disagreeable Sight to see a Mouth ill furnish'd, in which there wants one or several Teeth; and the second is grounded

on the Necessity of articulating the Voice, it not being possible for those who want Teeth to pronounce so well certain Words, as when they have them all. To obviate these two inconveniencies are recommended Ivory Teeth, very near the size of those in whose place they are to be substituted, they are pierc'd or bor'd, in order to run thro' them one or two Gold Threads, to fasten them to the neighbouring Teeth, about which this Thread winds and fastens the Artificial ones as firmly as if they were naturally fix'd there. The Operator causes as many to be made as he wants, two, three or four, &c. which are fasten'd together with Gold Thread, and are placed as we have said betwixt the remaining natural Teeth. We know some old Women who wear a whole row of false Teeth, and dare not open their Mouths for fear of discovering the substitution. But the mischief is, that Ivory in a small time grows yellow in the Mouth; wherefore *Fabritius* advises the making them of Oxes Shin-bones, and *Guillemeau* of a certain Paste, the Composition of which he teaches us, it consists of white grain'd Wax, and melt it with a little Gum *Elemi*, adding the Powders of Mastic, white Coral and Pearl. He affirms, that with this Paste may be formed Artificial Teeth which never turn yellow; and that 'tis also very proper to fill up the Holes of hollow Teeth.

How to ad-
just Artifi-
cial Teeth.

A Paste
to form
fæctitious
Teeth.

There are two Questions which are canvass'd with regard to the Teeth: The first is, whether when we draw the Milk Teeth of Children before they incline to fall of themselves, they come again more beautiful and streight; and the other, whether a Tooth refixed in the *Alveolus*, after having been pull'd out, may fasten and grow, as if it were not touched.

Expulsion
of the first
Teeth.

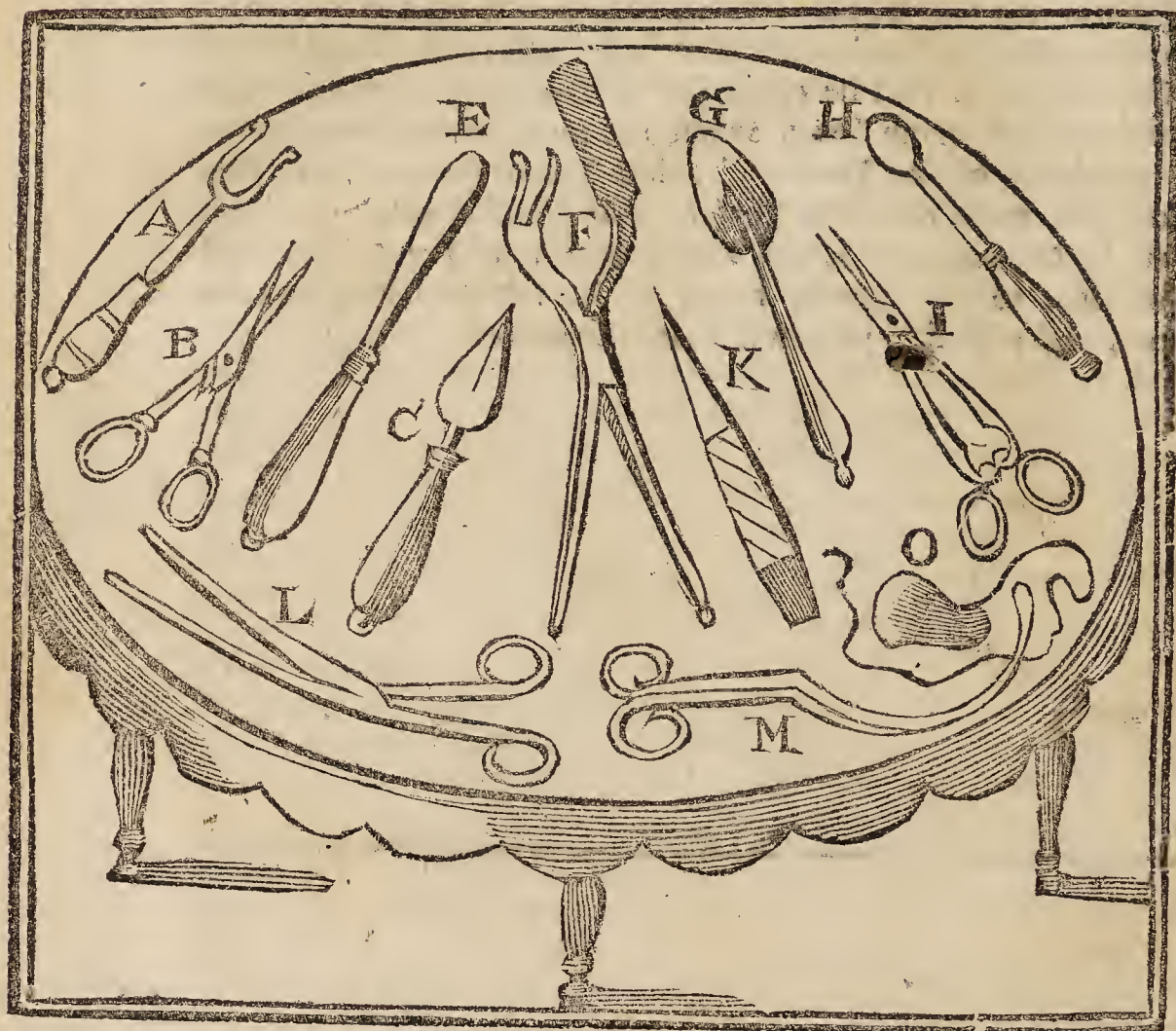
An Obser-
vation op-
posite to
the Popu-
lar Error.

'Tis a Mistake to believe, that the first Teeth can give an ill shape to the second, they are both of them form'd in little in the *Alveoli*, where they *Ossify*: The first being come out, after having served five or six Years, are driven out by the latter which take their Places; and observe, that the first have only as it were a Table, because the others in their growth don't give time to the first to perfect themselves, and to *Ossify* at their Roots, so that the old ones cannot spoil the shape of the new. I have this by Experience in a young Girl, whose Mother caus'd all her fore Teeth besides one to be drawn, for the space of a Year before they ought to be expected to fall, being fully possess'd with an Opinion, that the succeeding growth would prove more perfect; but she was deceived, they proving worse than the former. A Person of Quality devoted to Lewdness, caus'd her Daughter's Teeth to be drawn for a contrary Reason; the Child had very fine ones, and for fear that she might one Day boast this Advantage, the Mother would have them all drawn, that those

those which drove them out might be less beautiful, and consequently prove no Obstacle in her own career of Pleasure.

I don't believe, that a Tooth wholly removed can possibly *Very parti-*
refix in its Cavity, and quicken or grow as before. Mr. *Ver-* *cular In-*
duc tells us, that he heard that Mr. *Carmeline* (a very able *stance.*
Operator for the Teeth) having drawn a Tooth which was
not putrefied, instantly refixed it in its *Alveolus*, in which it
fasten'd so well, that he could not without great difficulty pull
it out the following Year, when the same Person came again
to complain of the Tooth-ach; but I can scarce believe this
Story any more than Mr. *Verduc*, who himself acknowledges,
that the Nervous Fibres and Vessels which convey the Life and
Nouriture to the Tooth, being broken, it cannot again take
Root, and perfectly join, when once separated.

FIGURE XLI. For the TONGUE and the UVULA.



Of the
Operations
practis'd on
the Tongue,
Uvula, Al-
monds and
Wind-Pipe.

The danger
of tearing
the Fræ-
nulum.

THE Tongue requires its particular Operations, the first of which is the Incision of the *Frænulum*, or String, which is prescrib'd in two Cases, one is when there is a supernumerary Ligament, and the other when the natural one is too big or too short.

Children are frequently born with a Membrane fasten'd to the natural *Frænulum* under the Tongue, and which hinders its coming out beyond the Lips, or performing its ordinary Motions. The Midwives sometimes tear it with their Nails, which Practice is not always exempt from inconveniencies, by reason they cannot thus break this Membrane which is very strong, without giving great Pain, and often drawing to the part a Flux, which disenabling the Child from Sucking, soon deprives it of Life. Wherefore they ought not to attempt to rend, or cut it, this Operation not belonging to their function; but to the Chirurgion who may very easily perform it.

it, provided he does not neglect any of the essential Circumstances.

If this supernumerary Ligament or *Franulum* is but little, it may happen to do no Mischief; but when 'tis large, and reaches to the end of the Tongue, the Child cannot throw it out at the Teat, but trifles with the Breast, not being able with all its Endeavours to get hold on it, because this Bridle under the Tongue detains it, and will not suffer it to press the end of it against the Palate, in order to draw the Milk; in which case the Child will die for want of sucking, if the Chirurgeon be not call'd to its Assistance. The Operator is then to take in his Left-hand the little Fork A, and in his right the Scissars B, having caused the Child to be turned to the Light, he raises its Tongue, which he keeps elevated with the Fork which grasps the Ligament, whilst with the Scissars he cuts off whatever he finds unnatural: When the Chirurgeon has no Fork at hand, his two Fingers may supply its Place, and will answer the end as well: The Child's crying is of use at this Moment, for it presents the Ligament the more uncover'd. As soon as this Bridle is cut, we lay a little Salt on it, and rub the Finger over it several times, not, as some say, to hinder its joyning again, for the continual Motions of the Tongue hinder that re-union; but that if 'tis not cut to the bottom, the Finger may tear the rest; which is very easily done, and the Nurse immediately giving the Child the Breast, soon appeases it.

The Facility with which we see the Child suck, enables us to determine whether the Bridle is well cut, and prove the Necessity of Chirurgery by the Want which Man sometimes has of that Art even from his Birth: There ought not to issue out above two or three small Drops of Blood; for if the Part should bleed much, 'twould be a sign that the Point of the Scissars had touch'd one of the two Veins under the Tongue, which ought to be carefully avoided. But in case this Misfortune should happen, we are to remedy it by stopping the Blood, either by the Application of some Medicaments, or astringent Powders; or by holding the Finger on the Orifice for some time, or else by covering it with a little Bolster dip'd in Styp-tick Water. When one of these Veins is open, and we discern it, there is little to be feared, because 'tis easie to stop the Blood; but if it be not remedied, the Misfortune may become very great, as we have seen at *Paris* fifteen Years since: The Fact was as follows.

A famous *Parisian* Chirurgeon cut the *Franulum* of a Child, which had been impatiently expected, and joyfully received, being a rich Heir: But this Comfort did not remain long with the Parents, the Child not long enjoying the Light, by reason that the Chirurgeon not suspecting that in cutting of the Bridle, he had open'd one of the *Ranula*, went away as soon as he saw the Child suck freely and easily; and the Nurse having laid

laid it in its Cradle after it had sufficiently suck'd, it continu'd to move its Lips as though it were yet sucking, which no Body took notice of, by reason many Infants habitually do the same whilst sleeping. But yet 'twas the Blood which issued out of the Vein, which it swallowed as it felt it in its Mouth, the Issue of this Humour being the more excited by the Infant's Suction, 'till there was no more Blood in its Vessels; which was no otherwise discerned, than by the paleness and weakness of the Child, who died a few Hours after; when 'twas opened and found that it had swallowed all its Blood, with which its Stomach was filled: I cite this Observation for no other end, than to warn Chirurgeons against falling into the same Inadvertence.

Of the Incision of the Frænum.

If the ordinary Bridle of the Tongue be too thick, or too short, we are to cut it without Hesitation. We frequently meet with Children which lisp at the Age of four or five Years, by reason that the motion of their Tongues is not free enough to articulate and distinctly sound their Words; in this Case we are to give them two or three small Cuts with the Point of the Scissars B, in several Places, in order to unbridle them, and by this Means set that Organ at Liberty to rove all over the Mouth: When the Patient can't put his Tongue out of his Mouth, we know that 'tis the Bridle which restrains him; and in this Case we have no reason to be afraid of cutting it, provided we avoid pricking the *Ranina Vena*, which lye very near it.

Of the Ranulæ.

There happen sometimes under the Tongue small Tumours, which are call'd *Ranula*, or *Hypoglosses*, which have something of the Nature of Wolves; they are commonly fill'd by a viscid Tumour, and when they once begin to appear, grow big in a short time, and some of them proceed to a dangerous Magnitude, if not check'd by Remedies. The Humour of which they are composed, is almost always contained in a *Cystus*, or Purse; for which reason several Authors advise us to dissect and take them out wholly with their Membranes. But this not being so easily practicable, by reason of the length of Time requisite to separate this Tumour, to remove it as we should a Wolf, and the operating in such a difficult and tender place as the Mouth, we are to find out a more convenient and secure way, which will prove to be that of making a simple Incision, by which the contain'd Matter being evacuated, the Indisposition grows perfectly well; for the proper Medicaments for the Resolution of these Tumours cannot be used in the Mouth, by reason that under the Tongue are two Salivary Vessels, which incessantly convey the Spittle into this Cavity, which would hinder their Operation. We take then the Scalprum or Lancet C, with which, the Mouth being open, and the Tongue raised, we make an Incision in the middle of the Tumour, whose Matter is no sooner run out, than we cleanse
the

the bottom of the Purse with *Mel-Rosatum*, and a little Spirit of Vitriol, dipping into it a small bit of Linnen fasten'd to the end of a little Brush, with which rubbing hard or scrubbing the inside of the *Cystus*, in order to exfoliate and consume what would otherwise continue some Days, we then frequently wash the Mouth with *Oxymel*, and after with a rough Wine mixed with a little Allom. I have seen some of these Tumours return, by reason that the Chirurgeon contented himself with barely making an Orifice with the Lancet, to void the Matter; the Wound closed, and the Tumour fill'd again; this new swelling was dissipated by the Evacuation of the Humour, but did not fail to grow again by slow degrees, 'till the *Cystus* was consumed, as we have hinted above.

The Tongue hindering our seeing to the bottom of the *A proper* Mouth, Artists have invented an Instrument shap'd like a very *Instrument* broad Spatula, and provided with a Handle, mark'd E, which *for the Ope-* very commodiously removes that Obstacle, by holding the *ration.* Tongue down so long, 'till we have found what we sought after. But if the Patient does not open his Mouth wide enough to discover what we aim at, we may use the other Machine F, call'd the *Speculum Oris*, with which we not only keep the Tongue in Subjection, but also force open the Teeth as much as is necessary: But we are not to make use of these Instruments 'till all more easie Means are vain; for if with the Handle of a Spoon we could keep the Tongue under, as is daily practis'd, we are not to make a dismal Parade of such Tools, whose bare Sight affrights the Patient.

There sometimes gathers on the Tongue a whitish foul Scurf, *Use of the* which renders it insensible to Tastes, wherefore those who va- *Spoon.* lue themselves on Cleanliness, ought to clean it every Day. Some people scrape it every Morning with a little Knife: But 'tis better to make use of the Spoon G, because that fetches off the Scurf which cloggs the small *Papilla*, with which the Tongue is interlac'd as well as the Knife, and cannot hurt it as that does, its edge always bringing with it, or very much damaging some Particles of that Organ, which deprive it of that nice Discernment, which it ought to have in the Preception of the gustable Qualities of Aliments.

The *Uvula* is a small carneous and cartilaginous Eminence, *Diseases of* suspended at the bottom of the Palate on the Root of the *the Palate.* Tongue. The Latins call it *Uvula*, and the Greeks *Pargareon* and *Kionis*, with regard to its Use, and its Figure resembling a *Pillar*, &c. which these Words signifie. It requires a Chirurgeon in two Diseases, to which it is subject, *viz.* to raise it when relaxed, and cut it off when putrified.

Those whose *Uvula* is relax'd, feel it as though 'twere a *Of its Re-* morsel hung at the bottom of the Mouth, and imagine they *laxation.* are ready to swallow it every moment: When they find this, *Remedies.* they complain to the Chirurgeon in the vulgar Stile that their
Palate

Palate is down, and intreat him to put it up again, believing a Luxation to have happen'd to it, as it does to several articulated Parts. In this case the Chirurgeon is to search before he makes any attempt: If it is red, thick and inflamed, he is to use gentle and cooling Gargarisms; and if white and lengthen'd, he is to raise it with the little Spoon made on purpose for that use H. in which he is to put a little Pomegranate-rind and Pepper beaten to Powder; then after having caus'd the Tongue to be held down, he is to get the end of the *Uvula* into the Spoon, which he is to push up, and hold that part in it for some time. The Powder of Pomegranate-rinds closes the too much extended Fibres, and the Pepper by its heat absorbs the Pituity which had soak'd into it: But the Chirurgeon is to take care he does not make use of this Remedy when this part is lengthen'd by Inflammation, as is sometimes imprudently done, without any regard to the Cause of the Indisposition, which requires a direct contrary Remedy; wherefore we are not to be surpris'd if in this case a Quinzy and Flux on all the adjacent Parts follows.

Operation
for a Tu-
mour at the
end of the
Uvula.

We find in certain Distempers a small transparent white Tumour resembling a Pearl stuck to the end of the *Uvula*, which is caused by the pituity which distils from the upper Parts, and glides to the extreme Point of this Eminence: If this Serosity cannot be dissipated and drain'd by Pepper and other Desiccatives, the Tongue being turn'd down, we are to take the Scissars I, whose Branches are long in order to reach to the bottom of the Mouth, and cut off that point full of Pituity. The *Uvula* being clear'd, we are to use astringent Gargarisms to reclose the Fibres, and restore the Part to its former Condition.

Of the Cut-
ting off of
the Palate.

In *Norwey*, and other cold Countries, the Inhabitants are subject to a Catarrh, caused by a pituitous Humour, which in the Winter distils on the *Uvula*, and so enlarges it as to suffocate the Patient, if not remedied. But the Disease is so pressing, that they don't expect the Restauration of their Health from the use of Medicaments, wherefore they have recourse to Operation, by which they cut off this part as soon possible. This Distemper is so frequent, that they are always provided with Instruments proper for this Operation; the most famous of all which is that invented by a Peasant in *Norwey*, which cuts off the *Uvula* in a moment, by means of a Spring which the Operator is to let fly as soon as he has plac'd this Instrument, which has had the approbation of all the Chirurgeons of its time; and *John Schlecterus*, Physician and Chirurgeon to the Republic of *Ulm*, has given us its Description in his *Armamentarium Chirurgicum*, or *Arsenal of Chirurgery*.

Inconveni-
ence of this
Operation.

This Operation is but very seldom perform'd here, as well because we are not expos'd to the same Catarrhs, as by reason we are prepossess'd with an Opinion that the *Uvula* serves to
modifie

modifie the Air which enters the Lungs, and that those Persons who have it cut off grow Asthmatick and Purfie, though *Scultetus* assures us, that this Operation is not attended with any Inconveniencies. But when we are oblig'd to perform it, the Scissars I are sufficient, after having thrust down the Tongue with the Instrument L; and some won't allow even the use of any Pincers, alledging that with them we ought to have three Hands, or make use of that of a Servant, which would prove very troublesom. I am surpriz'd to find some Authors in this *The Liga-* case to propose the Ligature, and others the actual Cautery: *ture and* For was it possible to bind the *Uvula*, the ends of the Thread *actualCau-* which would hang in the Throat 'till the Ligature had per- *tery not to* form'd its Section, would prove very troublesom; and if we *be apply'd.* should convey red hot Iron to the bottom of the Mouth, whatever Pipe we make use of to conduct it, the Patient and Spectators would be affrighted, and 'twould be very difficult to confine the Scar which would arise from that Operation to the part affected alone: We shall then content our selves with the Incision, which is not attended with any ill effect, because the Veins being there small, there issues out but little Blood, which with astringent and deterfive Gargarisms we cure in a small time.

On both sides of the *Uvula* are two great conglobated *Tumefac-* Glands, by some called *Tonsilla*, and by others Almonds, from *tion of the* the resemblance they bear to peel'd Almonds; on these Glands *Almonds.* there frequently happens a settling of Humours which so swell them, that the Patient cannot swallow without difficulty. We are not to spare Bleeding in these cases, in order to prevent the Obstruction which may happen to the Sanguinary Vessels, if they should tumefie excessively. When they are imbrued in Blood they always come to Suppuration, and that the rather by reason the moist Heat of the Mouth quickly ripens them: As soon as the Patient feels a Fluctuation there, we are with- *Operation.* out delay to open them with the Lancet K, wound about with a little Band as you see, whose point is to be directed to the Tumour, where we are to make an Orifice twice as big as that usual in bleeding. This done, the very moment that the Matter comes out the Patient is eas'd: But the Tumour is sometimes fill'd with a sort of burnt Blood which shews it self, and leaves a considerable Scar which we are to cause to fall off. We are then to make use of deterfive Gargarisms, compos'd of Barley, *Of Deter-* Agrimony, Black-Berries, Red-Roses, and *Consolida-Major,* *ives.* i. e. Comfry boil'd in White Wine: *Mel Rosatum* mix'd with some drops of Spirit of Vitriol, perfectly cleanses these Parts: We dip in this mixture a bit of Linnen fasten'd to the end of a small Stick, with which we rub the Scar a little hard, which usage of this Remedy it will not long resist.

Some of our Ancestors propose the Separation and Evulsion *Extirpati-* of these Glands, which Operation they very easily perform'd, *on of the* and assure us that they they will never more incommode the *Almonds.* Patient:

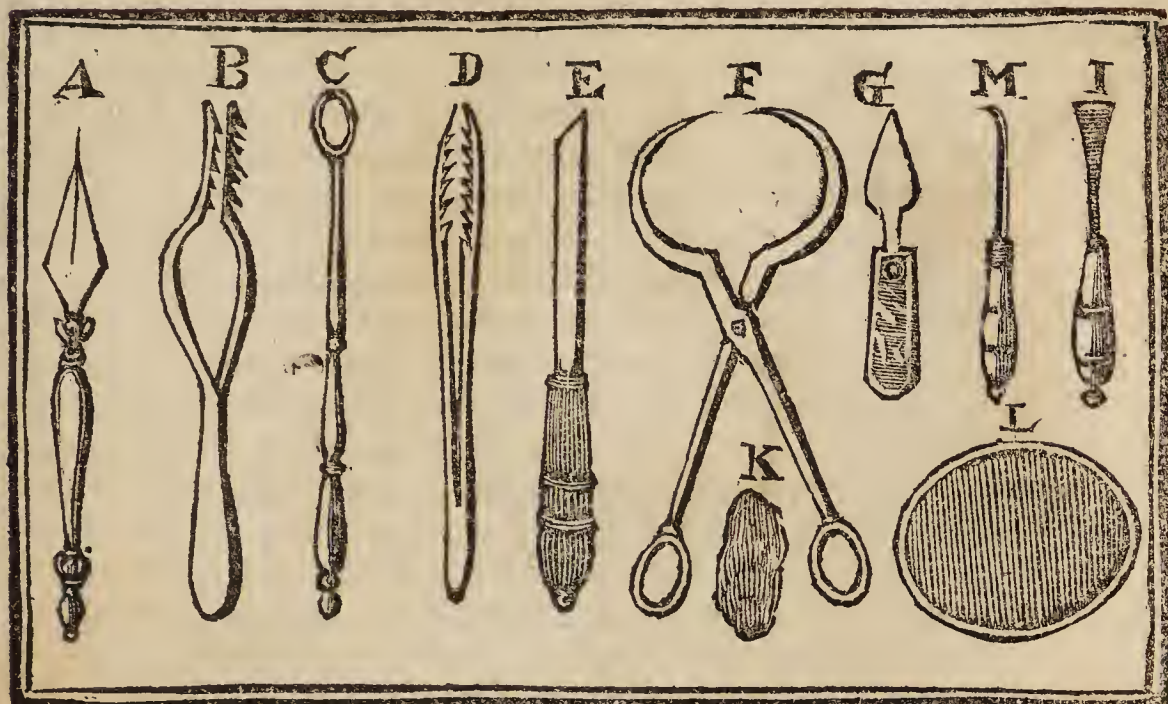
Patient: I refer you to the Methods which they propose of doing it, which I think very cruel; and would be glad of some better Security for their Success than their bare word; for the Function of these Glands being to separate and filtrate the Secretions which serve to moisten the Tongue, *Larynx* and *Oesophagus*, these Parts must find themselves depriv'd of that Dew, which is of such great use in the tempering the Air in the Lungs, and sliding the Nourishment into the Stomach.

How to
clear the
Throat.

In the Throat may sometimes be lodg'd some exotic Bodies, as Spines of Fish, Needles or Pins: The first thing to be done to clear this Pipe, is to thrust the Finger to the bottom of the Mouth, and endeavour to draw them out if we can reach them; but if they are too far descended, the Patient is to swallow a bit of crum Bread half chew'd, which Stopple frequently drives the other Bodies into the Stomach, and in case they cannot get it down, but prick the *Oesophagus*, the Patient is to be provok'd to Vomit, as the surest way to force whatever sticks in the Passage. But if that don't succeed, we are to thrust down the Tongue with the spoon G, or the *Speculum Oris* F, in order to endeavour to discover the Cause of the stoppage in the Throat: If we can discern it, we are to make use of the two Instruments L and M, which are very commodiously design'd to take hold of and draw out whatever stops the Throat. One of them, L, has strait Branches, and the other M curve ones, in form of a Crescent, to allow the Chirurgion his Choice, which of them is most proper, according to the Place where the exotic Body is lodged: But if it be so far advanced in the *Oesophagus*, that we can neither see nor feel it, we are to thrust into the Throat a peel'd Onion, rubbed over with Oil, which we are to force beyond the place, where we feel the exotic Body. Some fasten to the end of a course Thread N, a little bit of Sponge O, of the bigness of a Hasle-Nut, which having soak'd in Oil, they oblige the Patient to swallow, and then draw it back by the Thread after it has pass'd the Place where the Body stops, and they tell us that the Sponge is to bring it up along with it. Other Practitioners condemn the Use of the Onion, alledging that it may chance to break in bending, to accomodate it self to the Shape of the Throat; nor have they any better Opinion of the Sponge; for besides that, 'tis almost impossible for the Patient to swallow it, 'tis possible that it may stick in the *Oesophagus*, if the Thread slips through it, which may easily happen, considering 'tis of a Substance so easie to be torn: But they seem rather to approve a great Wax-Candle, which being pliant, bends to any shape at Pleasure, and we have it certainly in our Power to draw it out again: The Chirurgion may make use of any of these which he likes best, and tho' never so exquisite in his Art, he will in this Case be frequently puzzled.

Use of the
Onion,
Sponge,
and Wax-
Candle.

FIGURE XLII. For the EARS and ADJACENT PARTS.



THOUGH the Ears are Parts the least subject to Operation, Of the O-
there are yet two Cases in which it cannot be dispensed perations
with; one of which is, when they are naturally stopped; and practised on
the other, when some exotic Matter has entred them. the Ears.

Some Children come into the World with their Ears stopped, Paritodes,
which, if not remedied, they will not only prove deaf, but the Swoll'n
also dumb, by reason that never hearing others talk, 'tis not Throat,
possible to learn to speak. The Cause of this Deafness is ge- and the
nerally a small Membrane which stops the Ear, and is placed Scrophula.
either externally, or at the bottom of the Passage near the Obstru-
Drum. When 'tis exterior, 'tis easily cut with the Instru- ctions of the
ment A; the Orifice being made, we are to thrust in a Leaden Ears, and
Pipe, or only a Stopple, 'till 'tis wholly cicatrised. But when how to re-
the Membrane is thick, and approaches the Drum, 'tis very medyt hem.
difficult to convey any Remedy to it; for if we attempt to
pierce it, we run the risque of penetrating the Drum also; and
if we would make use of the Caustic to consume it, we are
yet in the same Pain for fear of cauterising the Drum, since
the Difficulty of conveying Medicaments directly to the Place
affected, because the Passage is very narrow, still remaining.
All that can be done, is to insinuate gentle Ingredients, which
do not corrode, but may, by their Use, by little and little at-
tenuate and thin this Membrane.

Several
ways of
drawing
out Cor-
puscles
which stick
in the Ears

We have recourse to Chirurgery, when something is gotten into the Ear: If a small Flie, or an Insect, and we cannot see it, we may then draw it out with the Forceps B, and if it be gotten too far in, with the Ear-pipe C we are to search for it, turning that Instrument at the bottom of the Ear, as we do when we endeavour to get out the Wax which grows there. But if it be a little bit of Flint, or a Cherry-stone, &c. stuck there in jest, or slipped in by Accident, we then begin with dropping some Drops of Oil of Sweet Almonds into the Ear, then laying the Patient on that side, we shake his Head a little, in order to force out what was before got in; and if it does not come out according to our Wishes, we are then to draw it out with the Forceps D, or with the Ear-pick, which we slide in on one side of the Stone, in order to get that Body into the Cavity of the said Ear-picker, and by that Means to bring it out with it: If these Methods don't succeed, we may make an advantageous Use of a little *English* Cork-screw, which forcing into the Cherry-stone, as into a Cork, we bring off that exotic Body along with it. Several make use of a Levitor in the same manner as is usual to draw a Bullet out of Gun-shot Wounds; and lastly, others propose the making behind the Ear an Incision in the Shape of a Crescent, in order to discover the exotic Bodies, and take them out at the Orifice: But this last way is not to be practised, unless only when 'tis impossible to draw out these Corpuscles, because 'tis to make an Orifice, which one is afterwards obliged to sew up, and which is not easily cured, by reason of the Cartilage of the Ear, which we cannot avoid cutting.

Women and Girls cause their Ears to be bored, in order to affix to them Pendants of Pearls and Diamonds, to add to their Charms, and that they may shine with the brighter Lustre: This little Operation does not deserve the Chirurgeon's Care, but ought to be left to the Female Head-dressers who frequently practise it

History of
an Ampu-
tation of
the Ears.

The *Chevalier de Nantouillet* has told us a Story, which we may believe at Pleasure: He informs us that being a Slave in Turkey, there happened to his Patron a great Defluxion on one of his Ears, and that being fond of rendring himself necessary to the Turk, he advised him to have it cut off, which was performed, and the Patient recovered. After this, his Patron believing him an able Chirurgeon, treated him better than before that Operation: But hitherto none but public Executioners have practised it in *France*, and we daily cure all Defluxions and other Indispositions which happen to the Ears, without Amputation of the exterior Part of these Organs.

Of the Pa-
rotides and
their Re-
medy.

The *Parotides* are conglomerated Glands, situate near the Ears, betwixt the posterior Angle of the Check-bone and the *Apophysis Mastoidis*: Their Use is, to separate the Spittle, and convey

convey it into the Mouth : When there is an Obstruction in the Ducts of these Glands, a Mass of Humours gathers there which swells them, and occasions a very great Pain. Children are very subject to this Indisposition, which is cured by rubbing the Part with Linseed Oil made very hot, and covering it with Wooll, which we cut off from the Sheep; the Oil dilates and mollifies the Humour which the Glands had soak'd up, and the Heat of the Wooll resolves it. Yet these Tumours often come to Suppuration, as it happened this Summer to almost all the Ladies of St. Cyr, whose *Parotides* were swell'd; for those Tumours terminated in a small Abscess, which we were obliged to open, making but small Orifices at the lowest part of them, barely to give Issue to the Matter, which is to be observed in all Children, but especially Girls, to avoid the Deformity of a large Scar.

There is a great Difference betwixt the Tumours which come on the *Parotides* of Children, and the swelling of the same Parts in Persons advanced in Years. Those of the first are composed of a Humour which is gentle, and of an easie Digestion, they ripen in a little time, and heal when the Matter is come out: But in adult Persons, they excite greater Pains, and produce a Scar like that of an *Anthrax*; wherefore they ought to be sufficiently opened to procure the falling of the Scar, and Caustics are necessary to consume the hardness of these Glands; after which we are to cleanse the Wound, incarnate it, and dispose it to cicatrize with as little disfiguring as possible.

The *Goetre* is a large Tumour which grows on the fore Of the part of the Neck; 'tis soft, pendant and moveable. The *Sa-Goetre*. *voyards* are almost all attacked by this Indisposition, as well as those inhabiting the Mountains, who are obliged to drink Snow-water, and that of cold Springs: But these Patients not complaining of any Pain, seldom have recourse to any Remedies; but see these Tumours begin, grow and augment to an excessive Bulk without any Concern, or being in the least disturbed with regard to the Consequences which may result from them. They give this Disease the Italian Name of *Gozza*, which imports a *swoll'n Throat*: Some style it a *Bronchocele* by Resemblance, as though 'twere a *Hernia* of the *Bronchia*: The Greeks also call it *Bronchokili*, from *Bronchos* the *Aspera-arteria*, or Wind-pipe, and *Kili* a *Hernia*, because the Tumour which rises on these Parts is like that produced by the *Hernia*: But that Name is improperly applied to them, for the *Hernia* proceed from misplaced Parts, but the *Goetre* results from a soft and pituitous Flesh contained in a *Cystus*, or Purse.

Cure of it.

If the *Savoyards* are not surprized at the growth of this Distemper in their Country, we are of another Opinion in *France*; the Women more especially cannot conceal their Uneasiness, when they find the least swelling in the Throat, and their Melancholy increases, in Proportion to the Growth of the Tumour, not by reason of the Pain which it gives them, it being generally indolent; but it spoils the external Shape of their Throat, in which consists one of their principal Ornaments. We are then first of all to endeavour to dissolve this swelling with a Plaister of *Diabotanium*, which is excellent in this Case, provided it be long worn and renewed every eight Days. But if the Tumour still encreases, and we are under an Apprehension that it may grow to a prodigious Bulk, we are prudently to proceed to Extirpation.

How to extirpate it.

The Patient may easily prevail on himself to undergo this Operation, for 'tis not so painful as may be imagined: The most exquisite Pain he is sensible of, being that which he feels at the making of the Incision on the Skin for the whole length of the Tumour with the Knife E, and 'tis with this Performance that we begin this Operation; this done, the Lips of the Orifice are to be widen'd, one being inclined to the right, and the other to the left, to make room to take hold of the Tumour with the Forceps mark'd F, and to dissect or cut it out in its whole Circumference, in order to extirpate the whole, as enveloped in its proper Membrane: The Vessels which moisten it are very small, and the almost Insensibility of the Tumour sufficiently evinces, that it does not take in any considerable

Dressing of the Wound. We need not sew up this Wound, no more being necessary than to wash it, and to draw its Lips together with the uniting Bandage, which is to be begun at the hind part of the Neck, and whose two ends pass over the Wound. If this Operation is dextrously performed, there remains barely an almost imperceptible Scar, and the Patient is freed from a Tumour which would have plagued her during her whole Life.

Of the King's Evil or Ker-nels.

The King's-Evil, call'd by the *Latins* *Scrophula*, and the *Greeks* *Choirades* from *Choiras*, which signifies a Hog, from the Similitude of these Tumours of the hardened Glands in Man, and the Neck of that Animal which is fill'd with such Glands. They proceed from a thick Flegm, which is sometimes acrimonious and salt in those which are painful: Children are most subject to them, because most greedy and voracious, and that they eat ofteneſt; and those Children which live on *Legumina*, Fruits and indigested Aliments are almost all scrophulous, by reason that the Chyle which is produced being crude, and not subtilised without Difficulty, stops in the Porosities of the Glands, where they produce these Tumours: Whence 'tis observable, that seventy five in a hundred of those which present themselves

themselves to be touch'd by the King, are the Children of Peasants, who have contracted that Distemper by gross feeding.

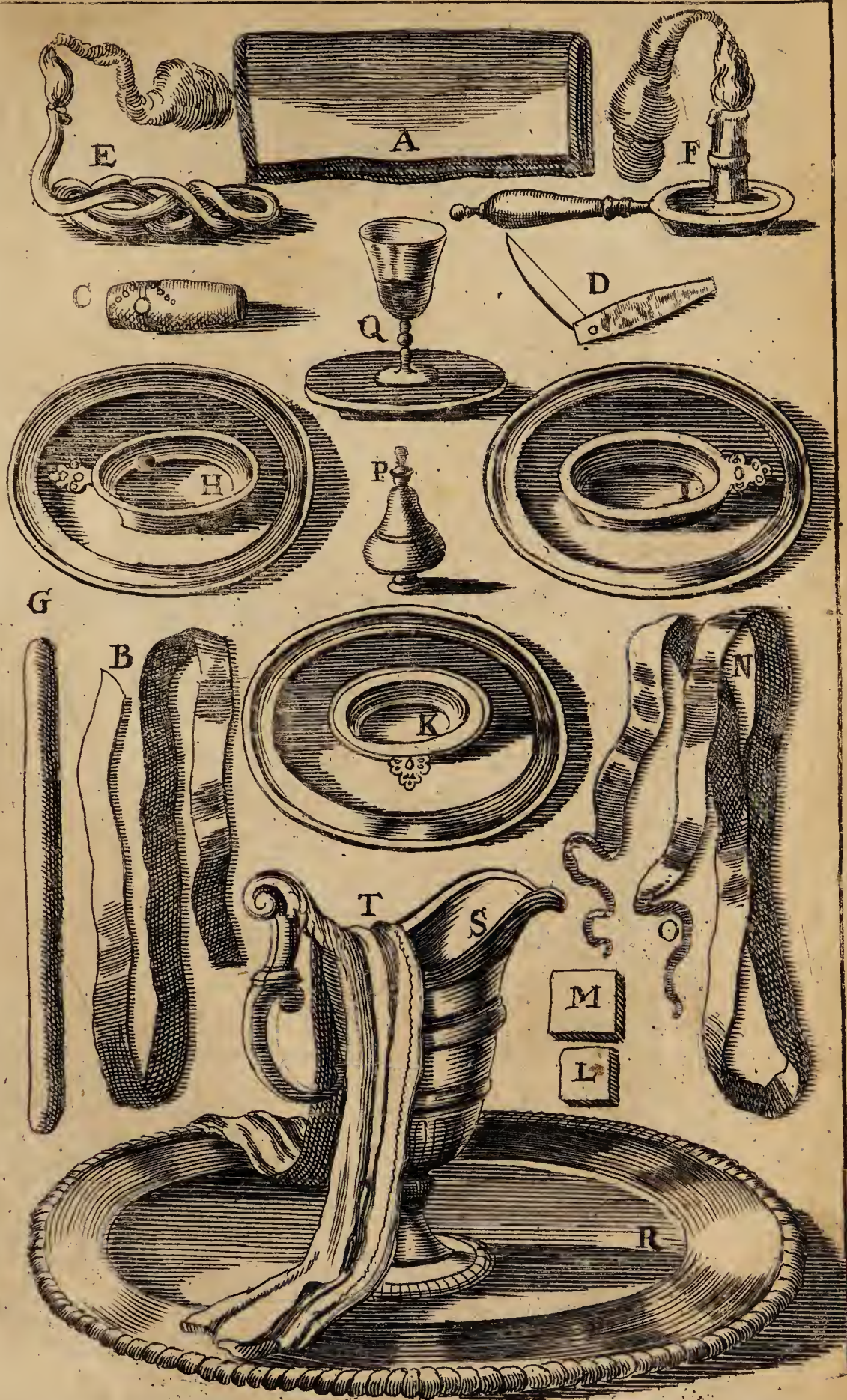
The *King's-Evil* or *Struma* is cur'd by a good Regimen of Proper Re-
living, and by general as well as particular Remedies: The *gimen, Me-*
Use of the *Panacea*, *Mercurius Dulcis*, and a *dissolvent Opiate*, *dicaments*
in Conjunction with the Application of the *Emplastrum de Vigo* and *Opera-*
on the Gland affected, daily cures it. But if the Humour is *tions.*
obstinate, foul and acrimonious, and it tends to Suppuration,
we are to open the Tumour, after having try'd all Ingredients
capable of mollifying its hardness: We then dress it with cor-
rosive Unguents which tend to scarifie, because we are not
to expect to procure a cicatrising before the Gland is wholly
consumed.

If only one or two Glands are tumefied, and they happen
to be the external and less moveable ones, we are rather to
remove them by Incision, than Caustics, which occasion a con-
tinual Pain, and require a considerable time. If then the Pa-
tient is fully resolved, and has Confidence enough in his Chi-
rurgeon, to throw himself wholly on his Conduct, he is
then to place him in a very good Light, seated in an Elbow-
Chair, a little leaning backwards, with his Head held by one
Servant, and his Hands by another: And then with the Lan-
cet G we are to make a longitudinal Incision on the Gland,
only on its Skin, beyond which this Incision is not to advance;
then the Operator takes in his Left-hand the pointed Instru-
ment H, with which he lays hold on the Gland, in order to
separate it the more readily, by cutting with the Lancet all the
Fibres, which fasten it to the adjoining Parts: And to facili-
tate its Disengagement, the Operator is to cause one Lip of
the Wound to be held by an Apprentice with the flat Instru-
ment I, which separates the Skin from above the Gland. When
one of the sides is thus loosened, we are to apply the same
flat Instrument to the other side, in order to separate it in the
same manner as the former; and thus we are to take out the
whole Gland. The Wound being well cleansed, with a Fea- *Cure of the*
ther we convey into it a little Balsam of *Peru*; then we are *Wound.*
to close the edges of the Orifice, which we are also to cover
with the Pledget K, above which is to be laid the Plaister L,
to cover the whole with the uniting Bandage, which I shew'd
you in the *Goetre*. We are not to dress this Wound every
Day, but let it agglutinate the Skin with the neighbouring
Parts, which is finished by the Balsam, seconded with the Rest
which is to be given to the wounded Part.

The King touches for the Evil five times annually, which *Cure of*
are on devotional Days: At each time there offer themselves *this Di-*
to be touch'd seven or eight hundred Patients, and a great *temper by*
number amongst them tell us, that they are cured by this *Faith.*
Touching;

Touching; for which reason I advise all those afflicted with this Distemper, to try this gentle spiritual Means of obtaining a Cure, before they throw themselves into the Hands of the Chirurgeons, who cannot pretend to exempt them from the suffering of many Pains, and who will always be ready to relieve them by the Performance of such Operations as those which have been just now demonstrated.

The End of the Seventh Demonstration.







The Eighth
DEMONSTRATION
O F
Chirurgical Operations.

Of those practised on the Upper Extreme
P A R T S.

O F B L E E D I N G.

G E N T L E M E N,



YOU know that the Body divides it self into two Parts, the Trunk and its Extremities : The Trunk comprehends the Head, Breast and Belly ; you have seen in the seven precedent Demonstrations all the Operations perform'd on those Parts, we are then at present to shew you those we are oblig'd to perform on the extreme Parts. Accordingly

I shall this Day demonstrate those which relate to the Upper, and to Morrow shall lay before you those of the Lower extreme Parts.

The superior Extremity is compos'd of the Arms, the Wrists and Hands, each of which Parts require their particular Operations ; all which we shall proceed to explain without omitting any. And I shall now begin with that of *Bleeding*.

*Excellence
of Bleeding.*

The greatest Remedy in the medicinal Art is, incontestably, Bleeding; it cannot be sufficiently prais'd, by reason of all its excellent Effects which so loudly declare in its Favour, that it must allow'd, that nothing hitherto invented has exceeded Bleeding. Let's then leave it to those whose Talent is Eloquence to dress its Panegyric, and content our selves with shewing our dexterity in performing this Operation, which on some Arms is the most difficult in Chirurgery.

*Case in
which the
Operation
is difficult.*

What I advance will surprize those who believe nothing so easie as Bleeding; and indeed I agree with them, that 'tis the most facile Operation when we find large Veins to be open'd; but they must, in conjunction with all those who are experienc'd in the Art of Bleeding, allow that in some Arms the Veins are so small that 'tis impossible to feel them, and very dangerous to hazard the opening of them. In the Opinion of all Chirurgeons, there are no Operations, how great and difficult soever they may appear, which they would not rather chuse to run through than some Bleedings, in which, after a tedious search, and due regard had to all necessary Precautions, the Vein slips from and escapes the Point of the Lancet.

*Its Incon-
venience.*

The greatest Misfortune is not that of making an attempt without Bleeding, but of opening an Artery, or pricking a Tendon. In which cases the Chirurgeon is never forgiven; for the World never examining the insurmountable Difficulties which occur in many Arms, nor the risque which he runs in the undertaking of those sorts of Bleedings, if he does not succeed, when the blame falls on him; for if he fails in Bleeding none will excuse him, or bear any part of his uneasiness; and to compleat his Misfortune, those who ought to defend him, are frequently tickled with a secret Rejoicing, and actuated by a jealous Temper are not displeas'd to see this Mortification fall on him.

Perhaps my instilling into the young Chirurgeon such a terrible Idea of Bleeding, by representing to him the Misfortunes which attend it, may be disapprov'd; but I don't do it to discourage him, but to disabuse and rid him of the common Opinion of the facility of performing it, and that he may not be buoy'd up with too much confidence, and thence expose himself by foolishly undertaking all Bleedings which present, as also to engage him to inform himself exactly of all the Particulars which regard this Operation, in order to perform it with that Approbation, nice Exactness and Celerity which it requires, and to provide him with all necessary Precaution to prevent pernicious Consequences of the ill performance of this Operation.

*Definition
and Divi-
sion of
Bleeding.*

By Bleeding, generally taken, we understand an egression of Blood out of any Vessel whatsoever; the Greeks call'd it *Angiotomie*, from *Angion* a Vessel, and *Termin* to cut; when we draw Blood out of an Artery, they stile it *Arteriotomy*; and when from a Vein, they give it the Name of *Phlebotomy*, from

Phlebs,

Phlebs, a *Vein*, and *Temnin*, to cut, of which last I am now to treat.

Bleeding is then the making of an Orifice in the Vein with a Lancet, in order to draw out more or less of the Blood, pursuant to the reason and intention of its being done.

This Operation is as ancient as the medicinal Art it self; it was practis'd before *Hippocrates's* time, and we find that great Man to have been very well acquainted with its usefulness, by his advising it as a sovereign Remedy in several cases, and which he owns to have himself perform'd with good success. In his time the Physicians set their hand to this Work; Physic and Chirurgery were exercised by the same Persons: But at present they are branch'd into two distinct Employments. The Physicians have taken for their share the whole theoretical Part, and left to the Chirurgeon the practical, and manual Operation.

In the Days of *Hippocrates* bleeding was not so frequent as at present, and yet they drew more Blood than we do now; for the Ancients reckon'd it by Pounds, and we by Porrengers: They suffer'd the Blood to run 'till the Patient grew feeble and faint, but withal did not bleed their Patients above once or twice; but twelve of our bleedings don't countervail two of theirs: Which justifies what *Hippocrates* says, that if a Woman with Child was let blood, she would Miscarry; he meant the Bleedings practis'd in his time, in which they took two or three Pound of Blood, and not those of ours of two or three Porrengers, which secure Pregnancy, and prevent instead of procuring Abortion.

If we should point out all the Cases which require Bleeding, we must draw up a Catalogue of almost all Diseases, as well as those which are in the Province of Physic, as those which depend on Chirurgery; for we scarce know any thing which don't require this Operation. What confirms me in this Opinion, is, that I find most Physicians prescribe it to all their Patients, which they would not do if they did not judge it necessary to their Cure; But it not being the Chirurgeon's business to discourse of those Distempers which are subjected to the medicinal Art, let us keep within the Bounds prescrib'd us, and only treat of the Bleedings proper for those Diseases which fall under the Cognizance of Chirurgery.

We may with some reason venture to say, that in those places where there are no Physicians, the Chirurgeon ought to be acquainted with all the Diseases which require bleeding; and also even in those where they are, there are pressing occasions in which immediate bleeding may save the Life, and there are also some cases in which, in order to enable the Chirurgeon to perform this Operation, conform to the intention of the Physician, 'tis requisite he should know why 'tis done: But this would be to stray from our subject, and soar too high.

We will therefore suppose that there are Physicians in all Places, and allow that in many Diseases the Chirurgeon ought to be no more than barely the Performer of their Orders.

Those in which 'tis necessary.

Apostemes, Wounds, Ulcers, Fractures and Luxations, all Diseases subject to the Chirurgeon, and in which he is always first call'd, cannot be cur'd without bleeding: 'Tis in these Cases so necessary, that if we would spare it, 'twould render the Cure impossible, and we should run the hazard of destroying the Patient; of which I am to convince you in few words.

Why in Apostemes.

By the word Aposteme, we mean all unnatural Tumours, of which there are four principal Species, the *Phlegmon*, composed of Blood; the *Erysipelas*, which proceed from Choler; the *Oedema*, which is produc'd by Phlegm; and the *Schirrus*, occasion'd by Melancholy: All these Tumours, according to the Ancients, proceed from a plenitude of Humours, which fall on some part, wherefore 'tis absolutely necessary to empty the Vessels, to prevent the part affected sinking under the Blood, which nothing can better hinder than bleeding.

In Wounds.

In all sorts of Wounds bleeding is not to be dispens'd with, and especially in those of the Head and Breast: When there is a small Vein open either in the Brain, or some other part of the Body, the Blood would continually drain out, if we did not empty the Veins at some other place; which is to be done by bleeding, as well to stop an *Hæmorrhage*, as to prevent the too great flux of Humours to the part affected.

In Ulcers.

All the Species of Ulcers, as well Corrosive as Cancrous and Fistulous, require bleeding: They are composed of a pungent corroding Serosity, which easily separating from the Blood penetrates to the ulcerated Parts, and keeps them in disorder. To cure them we are to sweeten the Blood; before we can compass which end, bleeding must take away some of it, without which 'twould be impossible to restore to the remainder its natural sweetness, and that balsamic Virtue which contribute to the closing of all Wounds.

In Fractures.

All Fractures, of what nature soever, as soon as reduced, require bleeding, to prevent any Settlement on the broken Part by the dilaceration of the Fibres, Muscles and Membranes: There always happens some Effusion of Blood, which would be larger if not stopp'd by bleeding; wherefore that Operation being very helpful on these Occasions, it ought to be perform'd twice rather than once; and since we are convinc'd of its usefulness, we are not to spare it.

And in Luxations.

No Luxations can be reduc'd without a strong Extension, which is not to be perform'd without Pain, whose natural Property is that of causing a Flux on the Part; in a replete Body it will not fail to be very great, without the intervention of bleeding, which by emptying the Vessel prevents the Blood falling on the part,

We don't stay 'till after the performance of our Operations to bleed the Patients, but always forerun them with one or several bleedings, in order to prepare the Patients to suffer, without prejudice, what we think proper after the Operation. We hear the Lithotomists telling us, that they never better cure their Patients, than when they have well bled them; the Oculists never spare bleeding of those which they dress; all good Chirurgeons practise it without regarding the number of times, but do it as often as is necessary to the Cure of the respective Diseases, which is the end they propose: In short, Bleeding may be styl'd the Sword at the Chirurgeon's Bed-head, by reason that it serves him to surmount and conquer his Enemies, which are all the Indispositions which endeavour to assassinate Man, and which would compass their end, without the assistance which he receives hourly from this admirable Remedy.

'Tis agreed, that Bleeding and Purgation are the Remedies which take place of all others; the one evacuates the Blood, *Comparison betwixt* and the other the Humours, which may prove pernicious to Man: But as we always remain Masters of Bleeding, and can stop it whenever the Patient cannot bear, or faints under it, *Bleeding and Purgation* and the course of the Purge once swallowed cannot be interrupted whatsoever mischief it may occasion, we may with Justice give the preference to Bleeding, which claims the first Rank, and whose Excellence cannot be too highly prais'd, considering the good Effects which we daily find to result from it.

Those who are naturally carping Critics, and would find *Objections* Spots in the Sun, cannot help allowing, that of all Remedies *and Answers concerning* this is the best; but they yet pretend to condemn the too frequent use of it, urging that 'tis a mistake to bleed in all sorts of Distempers, and that to bleed a Patient eighteen or twenty *frequent* times for one Disease, is to cut his Throat. To the first part *Bleeding.* of the Proposition we answer, that the first cause of all Distempers being in the Blood, by reason that 'tis compos'd of a mixture of an infinite number of Liquors which incessantly circulate thro' the whole Body, and are very subject to Corruption, as well as from the exotic Leaven which they retain of the Aliments, as because of the want of Respiration, or the Exercise of some other Natural Function, we cannot otherwise reduce them, than by having recourse to the Source, and evacuating the Blood, and those Liquids which occasion the Disease we desire to Cure. The answer to the second Proposition is, that we are to bleed more or less, according to the Nature of the Indisposition, and the Strength of the Patient. For, if without regard to these two Circumstances, we shou'd equally bleed all Patients, 'twould be to abuse this Remedy by using it without due Knowledge of a reason why; but there is no limited number set for any Disease, or any Patient. This Distemper suffers

fers it self to be tam'd by two Venæsections, that will obstinately resist a dozen; and if that Operation is sometimes performed eighteen or twenty times, 'tis on such Sanguine Persons whose Constitution renders such a quantity necessary to subject the Indisposition, and which are not so weak after that great number of Bleedings, as others would be after three or four.

Relation of
a Censor
of Phlebotomy.

From time to time there has always started up a set of Antagonists against Bleeding, who affecting singularity, have declared against it. About five and twenty Years past came to the Court a certain M****, who had acquir'd a great Reputation at *Paris*, he was a dry melancholy Man which spoke but little, and pretended to be of Quality. His Abettors gave out that he was very rich, and published that he practis'd Physic for no other reason, than barely that the wonderful Secrets which his Studies and Lucubrations had discovered, might not be buried in Oblivion. Madam *de Montespan* procur'd him to visit the Duke of *Maine* in his Sickness, and he had the Honour of conversing with the King; but his sole Merit being barely founded on the Opposition which he made to Bleeding, his Reign proved of a very short duration, he then returned to *Paris*, from which time his Reputation so declined, that two Years after he was no more talked of.

What is to
limit
Bleeding.

'Tis the true Chirurgeon's Business to proceed on in his way, without regard to the noisie clamours of those who declaim against Bleeding: They have been always angry at it, and then Bleeding has always been practis'd, and always will, by reason nothing in Nature can come up to this Remedy. The able Chirurgeon is to use it prudently, he must more frequently bleed Sanguine Patients, than those of another Constitution, he is to bleed old Men less than young, daily Labourers less than those who live idle, married People less than those who live single and continent, less in Summer than in Spring or Autumn, and very few Persons who otherwise have suffer'd a great Hæmorrhage, either by the Piles, some Wound, or the Menstruous Courses: In short, he ought not to take above two Porrengers of Blood from some, tho' from others he be obliged to take three or four, because there are no general rules with regard to Bleeding, any more than to all other Chirurgical Operations.

'Tis easie to answer those who are surpris'd at our bleeding more at *France*, and particularly at *Paris*, than at any other place in the World; 'tis because the Inhabitants of that Place breed more Blood, the Climate being more temperate, the Air thicker, and the Food better. The great dissipation in hot Countries is an objection against bleeding, and the necessity of preserving the natural heat in cold Regions forbids it; wherefore 'tis not proper in case of either of these extremes. But here where all Aliments wholly turn into Blood, and where we find that almost

all Diseases to proceed from no other cause than the plenitude of that Liquid, we find our selves under a necessity of evacuating the one, if we intend to cure the other; 'tis Experience which has led us to it, and we cannot err whilst we take her for our Guide. To this I add, that the People live so high at *Paris*, and so many new Dishes are there invented to excite the Appetite; that we are not to be surpriz'd if more Blood is bred there than in other places.

We Bleed at several parts of the Body, the Head, the Neck, the Arms and the Feet. I have already shewn you all the Bleedings practis'd on the Head and Neck, and at present shall proceed to demonstrate those usually perform'd on the Arms, and to morrow you shall be entertain'd with those practis'd on the Feet.

You know that he that attempts to make himself a Chirurg-
geon, ought to be endued with particular Talents, in order to enable him to exercise so important a Profession as that of Chir-
surgery; but he who pretends to excel in the Art of Phlebo-
tomy, ought to be stor'd with the qualities generally requisite in all those of his Profession. His Person must be agreeable, that he may not disgust his Patient, he must have Wit to per-
swade what he urges, an exact and piercing sight to distinguish the least Objects, so that he must not have any weakness in his Eyes, or be pur-blind or near-sighted; he must not have a large Hand, for that would be too heavy; but rather long slender Fingers, whose Skin is to be white and fine, that his Sense of touching may be the nicer: He must not be addicted to Drink-
ing, lest being called when overtaken in Wine, he shou'd be obliged to perform a difficult Bleeding; nor ought he ever to draw Teeth, knock in Nails, cleave Wood, play at Tennis or Bowls, by reason that all these Exercises tend to the spoiling of his Hand: To conclude, he is to have great regard to the preservation of his Hand, if he would bleed well, and continue long so to do.

*Qualities
of an able
Phlebotomist.*

'Tis not enough for the Chirurg-
geon to have a good Eye and
steady Hand, but he must be furnished with good Instruments, choice of
in order to bleed without Pain. The choice of Lancets does Instru-
not a little contribute to bleeding well; whenever they are the ments.
least blunt, or the Edge rough, we are to send them to the
Cutler, we are never to spare on this Head; for let the Chi-
rurgeon's Hand be never so light, with an ill Lancet he will put
the Patient to pain. He must therefore have them from Cutlers
of the best Reputation, what Price soever they cost: For above
fifteen Years I have us'd no other but those made by one *Corsin*,
a Cutler at *Lyons*, whose Lancets I have found so good, that I
could not make use of any other. I am also obliged to send
them to be set by him, for fear another Cutler out of Jealousie
shou'd spoil them. A Chirurg-
geon ought to be very careful
never to entrust his Instrument into any other hands, than
those

those which made them, because 'tis their Interest to preserve them in their first Perfection.

The Phlebotomist, endu'd with the Qualities which I have already pointed out, and provided with good Lancets, ought also to take care that they be of different length and breadth, to serve to apply to the different Veins which he is to open. Tho' this Operation is perform'd in a very little time, and seems one of the least considerable in Chirurgery, it does not yet less deserve to be consider'd in its three times; wherefore if he would perform it well, the Chirurgeon is to consider what is to be done before, during, and after Bleeding.

*Cases when
Bleeding to
be deferr'd.*

When Bleeding is prescribed by the Physician, there is no room left for the Chirurgeon's examination, but he is immediately to prepare for this Operation; but if it be ordered by the Patient himself, he is to inform himself of the Reasons which engag'd him to desire to be bled, and to see whether he is in a state to undergo that Operation; for if just come from a plentiful Meal, or has not in a long time taken any Nouriture, if in a cold or hot Fit of a Fever, or in a Sweat at the expiration of it, when he has just voided his Excrements, when in a Passion, when Cold, or when he has committed any other Excess, these are all of them Reasons for deferring Bleeding. But if there is nothing in the way which ought to hinder it, the Chirurgeon must then prepare all things necessary.

The Chirurgeon is then to begin with causing to be lighted his Wax, or Tallow Candle, the latter of which is by some preferred to the former, because (say they) if any Wax should happen to drop on the Arm, it would occasion more Pain than Tallow. I have practis'd Bleeding at Court for these six and thirty Years, all which time I have made use of a Wax Candle, and that Accident never yet happen'd to me. An end of a Wax Taper is more commodious than a whole one, which by reason of its length we cannot place where we please. The Wick of this Wax Candle must be indifferent thick to give the greater Light, the thickest winding Wax Candle is better than the stiff or streight sort, because we can bend and fold it at pleasure.

*Of the
Band and
Bolsters.*

We are then to prepare a band of Cloth, neither too new, nor too much used, of an inch breadth, and an Ell and half long, to each extremity of which I approve the sewing of a small end of Tape, as I have seen in the Nunneries in *Flanders*, as I was bleeding there; this is convenient to tye the knot, which by this means becomes less than when done with the Fillet. We then prepare two Bolsters of an Inch square, of Linnen folded ten or twelve times double, that they may be thick enough to press down the Vein; we prepare two, that in case the Blood comes to escape out, we may always have a second ready. The Ligature is neither to be of Lint nor Hemp,

the

the latter being very inconvenient, not binding the Bolster hard enough, and the Lifts putting tender Arms to Pain.

We then place three Porrengers on three several Plates, for *Of Porrengers.* should they all be set in one, they could not stand even, and consequently could not well be filled. We prepare three, tho' we intend to use but two, because the Blood sometimes comes out so freely, that we find it proper to go as far as the third Porrenger. These Porrengers have each a small ear to hold by on occasion, and they are to hold three Ounces each, that we may know exactly the quantity of Blood which we draw. Doctor *Duchefne*, first Physician to the Duke of *Burgundy*, will not allow us to bleed any otherwise than into these little Porrengers, by reason he will not allow us to take either more or less Blood than he orders. In bleedings which allow us the *Proper* the choice of the time of their performance, he advises the *time for* evening: I never knew any besides him, which did not prefer *Bleeding.* the Morning. The Chirurgeons find the Patient is cool'd, the Veins don't rise so well, and the Blood can scarce spring out with any force.

We then call for Water, with which we fill a Glass, we *Prepara-* cause to be got ready Vinegar or Hungary-water, if the Pati- *tives.* ent is apprehensive of Swooning. We cause the Patient to approach the edge of the Bed, which is on that side of the Arm we are to bleed, next we lay a Cushion or Pillow behind him, to bolster him up, and keep him sitting, and cover the Bed with a Cloth, to receive the Blood when it first flies out after the Aperture of the Vein; and if he is afraid that the Light may incommode him, we cause the Bed Curtains to be close drawn. The Wax Light must be held by a Person which has *Precaution.* a steady Hand, and who is not afraid of seeing bleeding; for if that Person shou'd turn his Head at the time of pricking the Vein, that motion would occasion another of his Arm, which removing the Light, may make the Chirurgeon lose his aim, and miss bleeding the Patient; wherefore in Bleedings of consequence the Operator shou'd bring with him a Servant on whom he cou'd depend, as well to hold the Wax Candle, as to hold securely the Patient's Arm, that he may not draw it back in the moment of the pricking.

When the King, or some of the Royal Family are to be bled, the first Physician holds the Wax Candle, and takes it for an *Circum-* Honour to render this Service, as the Apothecary does that of *stances at* holding the Porrengers. If there happen to be any Persons in the *the Bleed-* Chamber, which the Chirurgeon believes to be his Enemies, he *ing of a* may oblige them to depart the Place, because there should be *Prince.* no such People Spectators, as by their presence may disturb or chagreen him: Formerly the Chirurgeons made use of this Privilege, and once Mr. *Felix* the Father, going to bleed the King, order'd the Serjeant of the King's Chamber to put one of the Chirurgeons in waiting, who was his Enemy, out of the

the Chambers but at present this is grown out of use. All the times which I bled the *Dauphiness*, or any one of the Princes, the Chamber was full of People, and even *Monseigneur* and the Princesses sat down under the Curtain of the Bed without ever disturbing me.

Exterior
disposition
of the Chi-
rurgeon.

The Chirurgeon is to see whether he has nothing on which may incommode him; if his Sleeves are too long he ought to tuck them up, if his Peruke hinder him he is to tie it with a Ribband; in short, he is to take care that there be nothing in his way which may hinder the performance of this Operation: But he is not to follow the Example of one of the Chirurgeons of the greatest Practice in *Paris*, who causes the Windows and Doors to be shut, forbids any Person either going or speaking in the Chamber, and makes as great Preparations, and observes as many Precautions in a bleeding, as tho' he was going to cut off an Arm or a Leg. 'Tis good to take the measures necessarily requisite to Success; but these are extravagant, useless and even dangerous, for striking the Patient with a Terror, they hinder the Blood coming out as freely as otherwise it would.

Inconside-
ration of
some Pati-
ents.

There are some Patients, and particularly Women, who the first time that a Chirurgeon bleeds them, over-shoot the mark, by exaggerating the difficulty of bleeding them; but whether they are really hard to bleed, or the Chirurgeon to set a value on his Performance told them so, this Discourse is imprudent, for it may strike a timorous Chirurgeon with a fear; 'tis the Patient's business to give her Arm without making any difficulty of it, and the Chirurgeon is to surmount all difficulties, without having any regard to the Patient's Discourse.

Confidence
necessary to
a Chirur-
geon.

To conclude, the Essential Point to acquire Reputation in bleeding, is not to be so susceptible of Fear: But whenever the Chirurgeon is to bleed a Patient, how difficult soever he expects to find it, he is to consider with himself, if others have performed such Bleedings, why should not he be able to do it, and be fully perswaded, that though some Arms are very difficult, there are yet none which 'tis impossible to bleed. A good Opinion of himself is pardonable, with regard to bleeding, a little of it being necessary to make him exceed in this Operation; and though the World would impose on a Chirurgeon as a Law, that he ought to keep himself in a Medium, betwixt Hope and Fear, without inclining more to the one than the other, yet in order to become an exquisite *Phlebotomist*, he is rather to err on the side of Confidence, than that of Timorousness.

He must
be Ambi-
dexter.

The Chirurgeon must also be an Ambidexter, that is, he must bleed full as well with the left, as with the right hand; for he is to let blood on the right Arm with the right Hand, and on the left Arm with the left; to which Practice he is to accustom himself when he begins to learn *Phlebotomy*. Those
who

This need not be done

who are not so dextrous in the use of their Left-hand, as in that of the right, avoid bleeding the left Arm ; but are to be pitied, by reason that 'tis indispensably necessary, there being more Cases which require the bleeding of the left, than the right Arm ; for besides that the Diseases which render bleeding necessary, proceed equally from both sides ; some Patients, by way of Precaution, desire it on the Left-hand, that the right may remain free to write or perform the Functions which their Affairs exact from it ; and others being apprehensive of the pricking of an Artery, or a Tendon, will never suffer themselves to be bled, but on the left Arm, urging as their Reason, that if they should have the Misfortune to be lame, they shou'd yet have the Consolation left, that it is not on the right Arm.

All these Cautions being observed before bleeding, the Chirurgeon must take hold of the Patient's Arm, in order to perform that Operation ; which, though it consists only in a bare Puncture, yet has its essential and necessary Circumstances which are not to be neglected, if we will perform it well : Which we shall next proceed to examine one after another, in shewing how this Operation is to be performed.

After the Chirurgeon has hold of the Arm, the first thing he has to do, is to strip it to four Finger's breadth above the Elbow ; and if the Shift Sleeve, or any other bind too hard, 'tis to be ripp'd, because 'twould otherwise prove a Ligature, which stopping the Course of the Blood, would also hinder the bleeding. The Women at present wear a sort of single Ruffles, which are very troublesome in this Case, for though they bind the Arm never so little, the Chirurgeon is to cause them to be taken off : He then pins a Napkin under the Arm, which he turns over the Shoulder and Breast, that the Patient's Cloaths may not be spotted or stained with the Blood : This Circumstance must not be forgotten in bleeding Ladies of the first Quality, when with Child, or by way of Precaution ; for they then dress, in order to receive Visits, even before bleeding ; and if by chance some drops of Blood should happen to stain, or occasion the ruffling of any part of their Dress, they wou'd never forgive the Chirurgeon.

The Arm thus stripped, and the Napkin fixed, the Chirurgeon is, with the Woollen Ligature B, to bind it ; this Band ought to be red, that it may not be stained with the Blood, and about or above three quarters of an Ell long, that it may fit all Arms, and about an inch broad, that it may bind without hurting the Patient, a narrower being apt to cut the Arm, and a broader not being to be drawn tight enough : 'Tis to be of Cloth, which is neither too fine nor too coarse, either of which are attended with their respective Inconveniencies. Before we fix the Ligature two things are to be observed ; one, that the Arm be extended, and in the same Situation which it ought

Use of the Napkin.

Quality of the Ligature.

*Manner
of applying
it.*

ought to be in before the Puncture ; and the other, that the Hand be open and extended, and the Palm rests on the Chirurgeon's Breast, to prevent the Muscles of the Wrist swelling, and thereby altering the Situation of the Veins. We are then to fix the Ligature two Fingers breadth above the folding of the Arm, and the end of it which is to remain on the inside of the Arm is to be a little longer than the other, because 'tis to serve to make a Slip-knot, its two ends are to be rolled across on the back-part of the Arm ; and after having rolled it a second time over the first winding, we are to tie it on the outside of the Arm in a single Bow-knot, with the Loop upwards, and the two ends hanging down on the back-part of the Arm. This first time we are not to draw the Ligature any tighter than is requisite to bind on the Vein, and stop the Blood in the Wrist or fore-part of the Arm, without closing the Artery, which is to furnish the Veins with Blood, in order to make them rise ; and to procure the better Communication of that Liquor, we are to cause the Arm to be returned into the Bed, and if necessary wrapt up in a very hot Napkin.

Other Preparations.

During this Repose of the Patient, the Chirurgeon takes out of his Lancet-Case C, the Lancet D, which he judges fit to open the Vein, for there are broader and narrower to be made use of according as the Case requires : There are also others, whose Points are very fine, which are adapted to nice and tender Skins, and others with those called Barly-corn Points, designed for those who have a hard and dry Skin. The Lancet thus fixed on, 'tis to be opened so as not to make an acute, but an extended obtuse Angle, as is that mark'd D ; this he puts into his Mouth, turning the Point to the left, when he is to bleed the right Arm, and to the right when to perform that Operation on the left ; which he is to observe, in order to take that Instrument the more commodiously. He is next again to take hold of the Arm, which he is to extend and rest on his Breast as before ; he is next to shut the Patient's Hand, with his Thumb within his Fingers, that the Muscles by that Action swelling, may the better raise the Veins. As for my part, as soon as I have chose my Lancet, I put my Lancet-Case into the Patient's Hand for him to hold, instead of grasping his Thumb, and it produces the same Effect : This Case must also be given him to turn it in his Hand after the Orifice is made ; so that 'tis gaining of Time, the Patient turning it as soon as the Blood comes, without being obliged to ask for it.

He that is entrusted with the Candle, is to be placed on the Left-side of the Chirurgeon, near the Bed's-head : If the Operation is to be performed on the Right-arm, he is to hold it with the Left-hand, and withal a Plate in which is a Porrenger in his Right, which he is to hold under the Patient's Arm, to receive the Blood as soon as it issues out. 'Tis the Chirurgeon's

geon's Place to dispose the Candle; of which there are two sorts, the large wound Wax-candle E; and the other in the Candlestick F, both which are equally proper. He then places his Light, either on the in or outside of the Arm, according as he thinks most convenient, with regard to the point of Sight; after which, he is to examine the Veins, in order to chuse that which he shall conclude most fit to be opened.

There are four Veins in the Arm, which we may open: *The Vessels to* first, is the *Cephalic Vein*, so called, because being the highest, *be opened.* 'tis nearest the Head: The second is called the *Median Vein*, from its Situation in the middle of the Arm; the third is firnam'd the *Basilical*, from its taking up the Basis of the Arm; and the fourth the *Cubital*, because nearest to the Elbow. The *Median* and *Basilical Veins* are those which are generally bled, because they are larger and more commodious, as well to open as to draw out the Blood; but they are also the most dangerous. The *Basilical Vein* is often so near the Artery, that we *The Ten-* ought to be very cautious that we don't open the latter with *don and* the former; and the *Median* being placed on the Tendon of *Arteries to* the *Biceps*, requires the Chirurgeon's utmost Address to avoid *be avoided.* it: For the Artery and Tendon are two Rocks, on which unfortunate Operators split.

The Situation of the *Cephalic* does not allow the Blood to *The Ce-* spring out in an Arch as the others do; for in order to its *phalic and* streaming out in that manner, it ought to flie upwards like a *Cubital in-* Fountain, which this Vein can scarce be made to do, being *convenient* placed in the uppermost part of the Arm. In order to open *for bleed-* the *Cubital*, we are forced to turn the Patient's Arm in such *ing, but* a manner, as to incommode him as well as the Chirurgeon; *less dange-* besides which, the Skin being thicker in this place than in the *rous.* bent of the Arm, we are obliged to put the Patient to more Pain; for which Reasons these Veins are very seldom opened, though they are free from the Danger of pricking a Tendon or Artery, because there are none there. But yet I would advise the young Chirurgeon, if he be never so little afraid of pricking either the *Median* or *Basilical* in bleeding them, to apply to one of the other Veins, rather than hazard it in the least: It being much better to have performed a bleeding which is not so handsome and agreeable to the Spectators, than run the risque of laming the Patient for the rest of his Days.

All Arms have not four Veins which can be bled; there are *Exception* some which have but three, others two, and we are sometimes *in case of* very happy if we can find one; there are, it's true, in all of *some Arms.* them the same number, but they are sunk in so deep, that we can neither see nor feel them, which is the same thing with regard to the Chirurgeon, as if there were really none. He must then adapt himself to the Arm, and be content with the Veins which he can find, and do his best to come off with

Honour ; and when I say he ought to have recourse to the *Cephalic* or *Cubital*, I would be understood to speak of an Arm which affords the choice of Veins.

*Choice of
the Place
of the Vein.*

'Tis not enough to have pitch'd on the Vein, we are also to determine where we are to open it, which ought to be always in the place where it rises or appears best, and below the Scars of former Sections. For if we should make the Orifice above them, the Blood would not issue out so well, by reason that these Sicatrisings having contracted the Vein, it cannot come out so freely as below, where the Vein is of a larger Diameter. For this Reason a Chirurgeon who is desirous to spare an Arm which he is us'd to bleed, will begin with opening it as high as he can ; then descending always lower, he will place his Orifices near one another, and so bleed the Patient well, and besides keep a Reserve of Space, which he will find in proper time and place.

*How to se-
cure the
Place.*

When the Chirurgeon has fixed on the Place which he designs to prick, he is to mark it with his Nail, not only with one, but two Dents, the one above and the other below the Vein, and distant from one another, as near as he can judge, the thickness of that Vessel, in order to make the Orifice from one Mark to the other : That done, he is again to streighten the Ligature, in order to hold the Skin of the Arm the tighter ; and in this Case 'twill not signifie much to press the Artery, the Vein being sufficiently risen ; next the Chirurgeon is to rub the Patient's Wrist and fore-part of his Arm with his Right-hand, from the lower part upwards, to cause the Blood to mount in the Vein, towards the Place where he intends to open it, and at the same time grasping the Arm with his Left-hand, he claps his Thumb on the Vein, in order to prevent the Blood returning towards the Hand ; and lastly, before he takes the Lancet, which he holds in his Mouth, he touches the mark'd place with his Fore-finger, to examine whether the Motions he has been making have not changed its Situation.

*Manner of
holding the
Lancet, and
striking it
in.*

If he finds the Vein in the same state, then without turning his Eye off the Place which he has mark'd, he takes his Lancet, which he holds betwixt his Fore-finger and Thumb, by the middle of the Blade, in order to hold it the more steady, than approaching the Arm, he lays on it the ends of his other Fingers, to prevent his hand shaking at the time of the Punction: His Hand being secure, he brings the Lancet nearer the place to be opened, and placing it on the lower Mark, which is below the Vein, he thrusts it on 'till he is sure that 'tis in the Vein, and in withdrawing raises it, that is, he cuts the Skin as far as he judges necessary to bleeding well : The Blood follows the Lancet, and in withdrawing of it, flies out more or less, according to the bigness of the Vein, and the Heat and Vivacity of the Blood.

The Orifice in a Vein may be made three ways, either longitudinal or longwise, a-cross, and obliquely, the last of which is to be preferred to the others, as well on account of its being most convenient for the Operator, as because 'tis better for the Patient, it enlarging the Orifice, which facilitates the coming out of the Blood. To open a Vein well, no more than the two Fingers which hold the Lancet ought to act, they are bent when they convey the Lancet to the Vein, and the Hand being then rested on the other Fingers, which are sustained by the Patient's Arm, the Lancet enters the sole extending of the Finger and Thumb, and is drawn out by the same. If a Chirurgeon shou'd make use of his whole Hand to make such a light Orifice, 'twou'd with Reason be said of him, that he had a heavy Hand.

The Aperture comprehends two times, that of the Puncture, and that of the Elevation: The first is the time which is requisite to make the Lancet's way from without inwards; and the second, the Time required to make its way from within out again: When the Lancet enters, it cuts with both its edges; but when it comes out with only the upper edge, which we withdraw, raising it a little. There are some who add a Time of Incision, which they place betwixt the two others; but 'tis an unnecessary Multiplication of Beings, it being impossible for the Puncture and Elevation to be performed without Incision.

As soon as the Blood spurts out, the Chirurgeon folding in his Lancet, lays it at the edge of the Plate which holds the first Porrenger, in order to find it again the more easily: For shou'd he lay it on the Bed, it might fall and spoil, or else he might have the Trouble of looking for it on the Cloth which covered the Bed, which the Servants may have carried away. If the Candle is held at the inside of the Arm we are not to pull it back under it, for fear of burning the Part; but on the contrary, thrust it forwards towards the middle of the Bed, to shew the streaming out of the Blood. But some Patients will hold the Candle themselves, which the Chirurgeon is not to oppose, as well because he sees better what he does, as that it employing the Patient in some Measure, thereby prevents his fainting so soon.

If the Blood, after its first flying out, ceases to stream in manner of an Arch, that proceeds from the too hard Pressure of the Ligature on the Artery; the Chirurgeon is then immediately to slacken the Ligature, which instantly causes the Blood to stream out as before. This Particular alone ought to have opened the Eyes of the Ancients, with regard to the Circulation of the Blood. For it being wholly impossible for the Wrist or fore-part of the Arm to contain all the Blood which we draw out, that Humour must necessarily be conveyed thither by some Conduit: It cannot be by the Vein, its Course

Three ways of opening a Vein.
The Orifice made at twice.
How the Lancet and Wax-Candle is to be disposed.
What requires the Relaxation of the Ligature.

Manifest being stopped by the Ligature, it must then proceed from the
Proof of the Artery, there being only these two Vessels which conduct the
Circulation Blood through the whole Machine.

of the Blood The Chirurgeon is to make the Blood flow out in manner
of an Arch, and that only to satisfy the Patient and the Spectators, for the bleeding is full as well performed, when the Blood runs down along the Arm. I have above twenty times bled Monsieur Daquin, first Physician to the King, and he would never suffer the Blood to flie out in that manner, but wou'd have it run down along the Arm, and affirmed the Operation to be the better performed for that Reason. But yet the Chirurgeon must accommodate himself to the vulgar Notion, and raise or lower the Skin, in order to fix the Orifices of the Skin and Vein directly opposite to each other, and make the Blood spring out like the Streams of a Fountain; he is to bend the Patient's Arm a little, that the Skin not pressing too much on the Orifice, the Blood may run out the better; he is also to hold up the Arm, which otherwise would be fatigued with sustaining its own weight, if not assisted by the Chirurgeon's Hand: He is also to prevent the Patient's looking on his Blood, if he be one of those faint-hearted Wretches who are affrighted at the sight of a drop of that Liquor. He is to give him some round body in his hand, which he obliges him to turn about, without grasping it too hard; and this is to be done by a regular Motion, which may expediate the Course of the Blood towards the Orifice of the Vein.

What to be Some *Parisian* Chirurgeons carry for this purpose in their
given the Pockets, a round Stick G, a foot and half, or two foot long,
Patient to covered with embroider'd Velvet: This they give the Patient
hold in his to hold as soon as the Puncture is made, affirming that this
Hand. Staff not only serves to turn about in the Hand, but the end of it being rested on the Bed, serves to support the Patient's Arm. I never yet made use of this gentle Instrument, but always content my self with giving the Patients my Lancet-case, and that before I bleed them, as I have already hinted.

Servant's We cannot dispence with the use of Servants in bleeding;
Function. of which two at least are necessary, one to hold the Candle in one Hand, and the Porringer in the other while 'tis filling; and the other is to bring the empty Porringers, and carry them back to the Table when filled, and give the Band and Bolster when we want it; as also whatever may happen to be necessary when the Patient faints.

Rule for The quantity of Blood to be taken, is not equal in all Pati-
the quan- ents: If bleeding be prescribed by the Physician, the Chirur-
tity of Blood geon acts by a written Law, being obliged not to take a Dram
to be taken. more than he is ordered; if 'tis a bleeding by way of Precaution, he is to adjust the Proportion with regard to the Strength and Constitution of the Patient: If he bears it well, he may enlarge the quantity; but if he turns pale, and begins to find himself

himself ill, he immediately stops it. In short, there is an infinite number of Circumstances which I cannot recite here, and which 'twou'd be to no purpose to mention. I have observed, that when I have bled married Men before their Wives, these Ladies would never allow me to draw much Blood; and on the other side, when I have bled Women in the Presence of their Husbands, the Men never thought that I took away enough: Both of them have their Reasons, which are not very hard to be guessed.

When the first Porrenger, H, is almost full, we call for the second, I, which is to be held under the first, that when the former is taken away, the Blood may fall into the second; and so in like manner the third, K, is to be used; and whilst the last is filling, we cause the Band and Bolsters to be brought: He that carries the Porrengers of Blood from the Bed to the Table, must take Care to go easily, in order to avoid spilling of any of it on the Place; and also to set them in the same order that they were fill'd. To stop the Blood, the Chirurgeon is to loosen the Ligature, withal taking Care that the end of it don't fall into the last Porrenger, which we don't usually order to be carried away before the Ligature is taken off, and we become Masters of the Blood. To render himself Master of the Blood, the Chirurgeon claps the fore and middle-finger of the Left-hand on the Orifice: Then with these two Fingers he moves the Skin in a little Semi-circular manner, by which the Blood is stopped without so much as a single Drop coming out. Which done, the Porrenger is to be carried to the Table to be set in its place amongst the others.

The Chirurgeon next takes the little Bolster L in his Right-hand, and before he lays it on, he is to take off his two Fingers which keep the Orifice in Subjection, in order to allow it to discharge a little Blood; then placing them there again, he a second time stops the Blood, and immediately lays the Bolster on the Orifice, on which he afterwards lays a second Bolster M, which is larger; and holding both on with his Left-hand, with the Corner of a Napkin wetted, he dries up the Blood which may have stain'd or spotted the Arm: Then over the Bolsters he fixes on the Band N, at six Finger's breadth from one of its Ends, which he causes to hang behind the Arm, rolls it in a circular manner above the Elbow; and then re-passing it over the Orifice, he makes another Bandage on the Wrist, which he continues always crossing over the Bolsters, as many times as the length of the Ligature will allow. He then ties the two Ends, O O, behind the Wrist, or fore-part of the Arm; and that the Bolsters may not slip off in the Night, he fastens them to the Band with a Pin. He next covers the Arm again, by drawing down the Shirt and Waistcoat Sleeve, and bending the Arm, lays it in the Bed, enjoying the Pati-

Of the Porrengers.

Best with Thumb

Of the Bandage.

ent to hold it so bent on his Stomach, lest stirring it, the Orifice shou'd chance to bleed afresh.

Use of Bolsters.

If I advise the laying on two Bolsters, 'tis for the best; for 'tis certain that a small Bolster, cover'd over with a larger, presses the Incision much better than one alone, which causes its re-union the sooner: I know, that according to the common Practice one only is used, and I have often done the same. But if we have dry'd up the Blood with the Bolster, which we are to lay on the Flesh, we are not to turn that side which is bloody towards the Orifice, by reason it may occasion a Callosity on the Wound; but we are to turn the other side.

When the Bolster is to be wetted

The old way was, to wet the Bolster, as some Chirurgeons at present do; and when I learnt to bleed, I was taught so: But I quitted that Method, and in my Practice lay it on dry, and find it to succeed very well. And in this I agree with most good Phlebotomists, they at present not dipping it in any Liquor: A wetted Bolster growing stiff in drying, becomes hard enough to mortifie the Place to which 'tis applied. And we are not to wet it, unless there rise a small swelling about the Orifice, when 'tis little, or when we have reason to believe there is some extravasated Blood betwixt the Skin and the Flesh; but these sorts of Symptoms never happen when the Orifice is large enough.

Relief for the Patient when he faints.

When the bleeding is performed, and the Arm bound up, the Chirurgeon is not yet discharged of his Operation: If the Patient happen to faint, he is immediately to restore him, by taking the Pillows from under his Head, and laying him flat, sprinkling Water on his Face, and giving him Vinegar, Hungary-water P, or something else very strong, striking him with his Hands, and opening the Curtains of the Bed and the Windows to give him Air, and procure him a Liberty of breathing freely. The Patient being revived, we may give him half a Glass of Wine and Water equally mix'd; but if a Fever supervene, we are to give the Patient a Ptisan, and placing the Arm in a proper Posture, leave him to his Repose.

Observation to be made on the Blood.

All requisite to be done to the Patient being performed, the Chirurgeon approaches the Table to see the Blood. Some Chirurgeons blow off its Scum, others take it off with a Card or Feather; alledging that thereby discovering the Superficies of the Blood, they are better enabled to discover the good or ill Qualities of that Liquor. But for my part, I never take the Pains to take it off, because I am of Opinion, that this small stirring may disorder the Superficial Fibres of the Blood, and hinder our discovering its Qualities, and that the rather, by reason that the Scum never covering the whole Porrenger, we may, by what remains free from it, determine the Nature of the Blood. The Physicians almost always, when they visit their Patients, ask whether the bleeding was well performed, and whether he bled freely? And when the Scum is left on it, 'tis

a convincing Proof that it flow'd out in an arched manner, and very swiftly: But these are Questions which might be spared, since no more is necessary than to cast our Eyes on the Blood, in order to be informed of the manner of the Patient's bleeding.

We are not to fail to mark the Porrengers, by fixing a little *Distin-* bit of Paper on the first, two on the second, and three on the *guishing of* third: For though an Omission in this Case be but light, 'twill *the Por-* infallibly be charged on the Chirurgeon as Criminal, when the *rengers.* Qualities of the Blood come to be determined, though any Confusion betwixt the first and second Porrenger is of very little Importance. There are some Porrengers which are mark'd one, two, three; but they must be brought in order, and it frequently happens that a Servant mistakes, and sometimes the Figure engraven on the edge of the Porrenger is cover'd with Blood; so that the safest way, is that of marking with Paper.

One of the Domestics presents to the Chirurgeon to wash *The favou-* his Lancet in the Basin R, pouring into it the Water in the *able* Ewer S, and with the Napkin T the Chirurgeon wipes his *Judgment* Hands, and the Lancet. He is next to entertain the Patient *which the* with Remonstrances of the Necessity there was of this bleed- *Chirurgeon* ing; if the Blood sprung out vigorously and plentifully, he is *is to give* to demonstrate to him how necessary 'twas to draw it, by in- *of the* sinuating that the too great Plenitude of that Liquor, under *Blood.* which he labour'd, might possibly throw him into some dangerous and mortal Distemper. If he faints under, and can scarce bear the Operation, the Chirurgeon is to hint that those Bleedings which reach the Heart are the best: If the Blood is foul and corrupted, he tells him, that the part of it which he has lost, helps the Circulation of, and purifies the Remainder. If 'tis of beautiful Vermilion Colour, he felicitates the Patient, telling him that 'tis an infallible Proof that the Part yet remaining in the Veins is of the same sort, and that such Blood promises a long continued State of Health. To conclude, let the bleeding prove how it will, he is yet thence to deduce favourable Consequences to the Patient.

In case of bleeding some Questions generally offer. It, for *A Glass of* Instance, the Patient asks whether he may drink a Glass of *Water good* cold Water immediately after bleeding? The Chirurgeon is to *after bleed-* be so far from opposing, that he ought to advise it, not only *ing.* because it can do no hurt, but, on the contrary, may have a very good Effect; for the Water finding a quick Passage into the Vessels, in order to fill the place of the evacuated Blood, must necessarily cool and moisten the remainder, which is the Intention for which 'tis given. I have seen some Ladies cause *Superstiti-* to be brought into their Chambers a Pail full of cold Water, *ous Custom.* into which they have ordered their Blood, when just drawn out, to be thrown; affirming, their remaining Blood to be

thereby Sympathetically cool'd: I leave you to judge whether they are in the right or no; but shall not contradict their Opinion, being firmly perswaded that if the Water does not produce the good effect which they expect, at least it can do no harm.

Sleep allowed after drinking a Glass of Water.

One Question often propos'd by Patients, is, whether they may Sleep after Bleeding? which hitherto I have always seen forbidden, but never could yet discover the reason of that Prohibition, at least unless it proceed from an apprehension that the Ligature may rub off in the Sleep: If there are any other Reasons, they are above my comprehension; but if there be no other than that, it ought not to deprive the Patient of the sweet repose which Bleeding produces; wherefore after the Patient has drank a Glass of Water, I never oppose the Sleep which seizes him.

Where the Blood is to be set.

The Blood which we have let out must not be exposed to Wind, or the heat of the Sun, but set in the Shade on a Table, in a place neither too hot, nor too cold; that cooling by slow degrees, the Liquors of which 'tis compos'd may separate, each taking their places according to their solidity or levity. The Chirurgeon then ends with advising the Patient to take a little Broth an Hour afterwards, that being the most proper Food after Bleeding; after which having received the reward of his Pains, which is very mean at present, he takes leave of the Company.

If the Chirurgeon will next Day pay a Visit to the Patient, he is first of all to examin the Blood, in order to prepare himself to answer all the Questions of the Patient, concerning the good or ill Dispositions of it. But of what Nature soever he finds it, he is not yet to tell the Patient any thing but what is encouraging; and even tho' it shou'd have come to a degree of Putrefaction, which might give us reason to fear some grievous Distemper, he is not to alarm him with the Thoughts of Futurity; but only to hint to him that he is to neglect the use of no means which may contribute to the correcting and putrefying of the Blood, and clearing it of those ill Dispositions which may become the real Causes of manifest and dangerous Distempers.

Vulgar Error with regard to the goodness of the Blood which comes out of a small Orifice.

'Tis a mistake to believe that none but the purest Blood runs out at a small Orifice; the Publick is insatuated with this Opinion, and 'tis impossible to disabuse it. 'Tis indeed true, that the Blood which comes out in a small Stream seems red, and of a Vermilion Colour, because being long in filling the Porringer, the Air has more time to cool it, and it coagulates before the separation of the Parts is performed; but yet 'tis not less indispos'd than that which remains, for a large or small Orifice equally draws out such Blood as is in the Vessels, as a large or small Cock does the same Wine out of the Hog-head.

If we shou'd receive the Blood in the hollow of the Plates, *Whence* 'twou'd appear very beautiful, because the Cavity is of a wider *proceeds* extent than that of the Porrenger; 'tis sooner cool'd, and con- *the diffe-* frequently coagulated before the separation is made betwixt the *rence of* ponderous and light Particles, or to talk more modestly, 'tis *the Blood.* more stricken by the Air, which leaving on it more Nitre, that imparts to it the Vermillion Colour which we see on it. But if we receive it in the Porrengers, their Cavity being narrower, and retaining the heat of the Blood longer, the thickest part has time to sink to the bottom, the less Solid to occupy the middle, and the most Serous to float on the Superficies. This proof is convincing, when a Porrenger is so full as to run over into the Plate, when that in the latter is of an excellent florid Colour, when sometimes that in the Porrenger looks so fowl, that one would not believe them to be the same Blood, tho' they really are so.

Chirurgeons are not allow'd to Discourse on the different *The Blood* qualities of the Blood, wherefore I shall not speak of it here, *known by* tho' they are the first that give their Judgment. For the Blood *its Stains* is no sooner sprung out on the Cloth, than the Chirurgeons *and Smell.* by the Spots which they find there, know whether the Blood is good or bad; and during the Bleeding, whilst 'tis running into the Porrenger, there arises a Vapour, which striking the Chirurgeon's Nostrils, enables him to judge of its good or ill disposition; but leaving the rest to those, to whom the Arbitrary Judgment in this case belongs, I only desire that in pure Justice to the Chirurgeon, they wou'd not accuse him when they don't find the Blood as bad as they expected.

Bleeding is the most common Chirurgical Operation, and *Accidents* seems the easiest, but yet is liable to the most Accidents; some *attending* of which may justly be ascrib'd to the Chirurgeon, of which *Bleeding.* sort are the pricking of a Nerve, Tendon, or Artery; but an infinite number of them are follow'd by fatal Consequences, which, tho' the Patients themselves have occasion'd them, they yet expect the Chirurgeons to be responsible for them. He who bleeds most, is most expos'd to these Misfortunes, because that having acquired the Reputation of bleeding well, the most difficult Cases fall to his Lot. In the Opinion of all Chirurgeons Bleeding is the most dangerous Operation in their Art, and that which gives them the greatest Mortification: They desire to rid their Hands of it as soon as they possibly can, and when they come into good Practice at *Paris*, they are very glad to quit Bleeding, firmly believing they have drawn a great Thorn out of their Foot.

The least of all these Accidents is that of missing Bleeding; *Of missing* it being often more prudent to withdraw the Lancet without *Bleeding.* drawing Blood, than to continue ploughing the Arm with the point of the Lancet, resolving to enter come what will, it being much better not to have drawn Blood, than to run the hazard

zard of pricking an Artery, or a Nerve in an Arm, where the Vein being surrounded with Fat, continually slips from the point of the Lancet. If the Person which holds the Candle stirs at the instant of the Puncture, or the timorous Patient withdraws his Arm at that moment, the Chirurgeon may miss his aim, and whether it be his fault or no, the World never fails of rendering him responsible for all Accidents.

Whence
proceeds
the Ecchy-
mosis.

If there happen an *Ecchymosis* around the Orifice, or if the extravasated Blood forms a small Abscess, which suppurates by reason of the Bleeding Aperture, 'tis always the Patient's fault, proceeding from his using his Arm too soon, which Action has forc'd the Blood out of the Vein, the farther course of which being stopp'd by the Ligature, spreads it self betwixt the Skin and the Vein; as it happen'd to a Waiting-woman to a Lady of the first Quality which I bled in the Morning, an Hour after which she comb'd and dress'd her Lady, being unwilling that she shou'd know she had been bled. She sent for me, by reason her Arm put her to great Pain; and tho' she design'd to hide it from her Lady, I yet immediately told her, that she might know the Truth. She blam'd her Maid for Bleeding without her Knowledge, and not resting her Arm, if she really wanted Bleeding.

There is in the Wrist a large *Aponeurosis* which surrounds it, and which has been hitherto taken for the common Membrane of the Muscles; and when the Chirurgeon is obliged to bleed a prominent Median Vein, he can hardly avoid touching the *Aponeurosis*, which sometimes occasions a trembling, which the Patient feels even to his Fingers ends; for which reason this sort of Phlebotomy is to be avoided as much as possible: But if the Patient is not to be bled any where else, and this Membrane happens to be touch'd, there follows a flux of Blood, Pain, Callosity, and sometimes an Abscess, which gives the Chirurgeon no small Mortification.

But tho' these Accidents don't proceed from any fault of the Chirurgeon, he is yet to remedy them, lest they should happen to be attended with some ill Consequences, and those who are ignorant how they came, shou'd aggravate them, and they yet fall on the Chirurgeon's Head. If the Case be a simple *Ecchymosis*, 'tis cur'd by fomenting it with Brandy, or Spirit of Wine: If there happen to be some stale Blood which will come to Suppuration, 'tis to be forwarded by a Plaister of Wine, and a little *Basilicon*; and when the Pus is come out at the Orifice, we are to dry it up with a Plaister of burnt Cereuse. If 'tis a Flux of Blood on the Wrist, occasion'd by touching of the *Aponeurosis*, we are to bleed the adverse Arm several times, to divert the Humour which is steering its course towards that part; we also embrocate the part with the Oils of Roses, Camomile, Melilot and Worms, and apply Anodyne and resolvent Cataplasms.

There

There sometimes gathers a Settling in the Arm which is Cure of bled, tho' not at all occasion'd by the Operation, which hap- settling of pens to *Cacochymical* Persons surcharg'd with Humours, which Humours. are always ready to throw themselves into any part. If the Patient happens to be let Blood at such a time, these Humours determine themselves to flow to that part which has been emptied by Bleeding. In this Case, the next Day we find the Arm tumefied, full of Pain, and swelling as it were in our sight, and it will grow to an extraordinary bulk if we don't endeavour to divert the Torrent by plentifully Bleeding the other Arm, by Cordials internally administred, and the application of proper Remedies to stop the course of these Humours, to resolve them, and defend the Arm from those in which 'tis soaked. These Humours are sometimes so outrageous, that I have seen them gangrene the second, and the Patient die the third Day. A misfortune of this Nature happen'd to the Wife of one of the Queen's Officers, who touch'd with Grief for the loss of an only Son fell ill; I was to have bled her on the Morrow, but she alter'd her Opinion, chusing rather to go to a Country House she had near *Versailles*, where she caused her self to be let Blood at the Foot; upon which there fell such a great quantity of Humours into the Thigh and Leg that they gangrened, and she died in three Days. Some time since the Duke of *S. Simon* was let Blood at *Paris* by one of the Chirurgeons of the greatest Practice; after which followed a Flux of Humours into the Arm, caused by the Indisposition in which it was, which ended in an Abscess, which was open'd and cur'd in three Weeks without laming him. Nevertheless the Chirurgeon was charged with pricking the Tendon, or a Nerve, and every body condemn'd him; but the speedy Cure justified him, by making appear, that neither of those Vessels was hurt, because when they are, they require several Months to recover them.

A Chirurgeon may unhappily prick a Tendon, or a Nerve, Of the but these Punctures are not Mortal; but in these cases the pricking Remedy which Chirurgery prescribes is to be apply'd; to in- of a Tendon or struēt you in which, I think I cannot do better than to relate to you here the Story of *Charles* the IXth, to whom this Nerve. misfortune happened; and please to take it in the Words of *Ambrose Pare*, his first Chirurgeon, and one of our most famous Authors, as he has left it us in Writing. " The King having a Fever on him, Monsieur *Chapelain* his first Physician, " and Monsieur *Castelan* also Physician to the King, and first " Physician to the Queen, his Mother, order'd him to be bled. " To perform which a Chirurgeon fam'd for Bleeding well " was call'd; he intending to open the Vein, prick'd the " Nerve, which immediately made the King cry out, affirm- " ing that he had felt an extraordinary great Pain, upon which " I cry'd out very loud, that the Ligature shou'd be slacken'd. other-

" otherwise the Arm would very much tumefie, which hap-
 " pen'd immediately afterwards, when also it became contra-
 " cted, so that his Majesty could neither bend nor extend it
 " freely, and he felt an extream Pain not only at the Orifice but
 " all over the whole Arm. The first and most sudden Remedy
 " which I apply'd was a small Plaister of *Basilicon*, to prevent
 " the Orifice agglutinating, and over the whole Arm I laid
 " Bolsters dipt in *Oxycratum*, binding it with an expulsive Li-
 " gature, beginning with the Wrist, and ending near the Shoul-
 " der, in order to return the Blood and Spirits to the center of
 " the Body, lest the Muscles should otherwise labour under a
 " too great Fluxion, Inflammation, and other Accidents.
 " This done, we retir'd to consult what Medicaments were to
 " be apply'd to assuage the Pain, and obviate the Symptoms
 " which generally attend Punctures of the Nerves. I propos'd
 " the putting into the Puncture Oil of Turpentine very hot
 " with a little rectified Spirit of Wine, and covering the Arm
 " all over with a Plaister of *Diachalcitheos* dissolved in Vinegar
 " and Oil of Roses, and to continue on the expulsive Ligature.
 " My Reasons were, that the mention'd Oil and Brandy were
 " strong enough to penetrate to the bottom of the Puncture,
 " and dry up the Humidity which issued from the Substance of
 " the Nerve, and by their actual as well as potential heat to
 " assuage the Pain; and the Plaister of *Diachalcitheos* has also
 " the vertue of resolving the Humour which was gotten into
 " the Arm, and prevent the descent of other Humours. As for
 " the Ligature, it serves to corroborate and restrain the Muscles,
 " express and return towards the upper Parts the Humour al-
 " ready descended, and hinder a fresh Flux of more; to which
 " the said Physicians agreed, and concluded these Remedies
 " useful and necessary. By the use of these the Pain ceased;
 " and farther to resolve the Humour contained in the Part, Re-
 " solvents and Desiccatives were used, as, *viz.* Take of the
 " Flower of Barly and Vetches two Ounces each, of Camomil
 " and Melilot Flowers two Pounds of each, of fresh Butter an
 " Ounce and half, and a sufficient quantity of Barbers Lye to
 " make a Cataplasme. The King continued three Months and
 " longer unable to bend or extend his Arm, but yet, God be
 " thank'd, was perfectly well cur'd, without the Functions of
 " that part being at all vitiated.

Of the o-
 pening of an
 Artery.

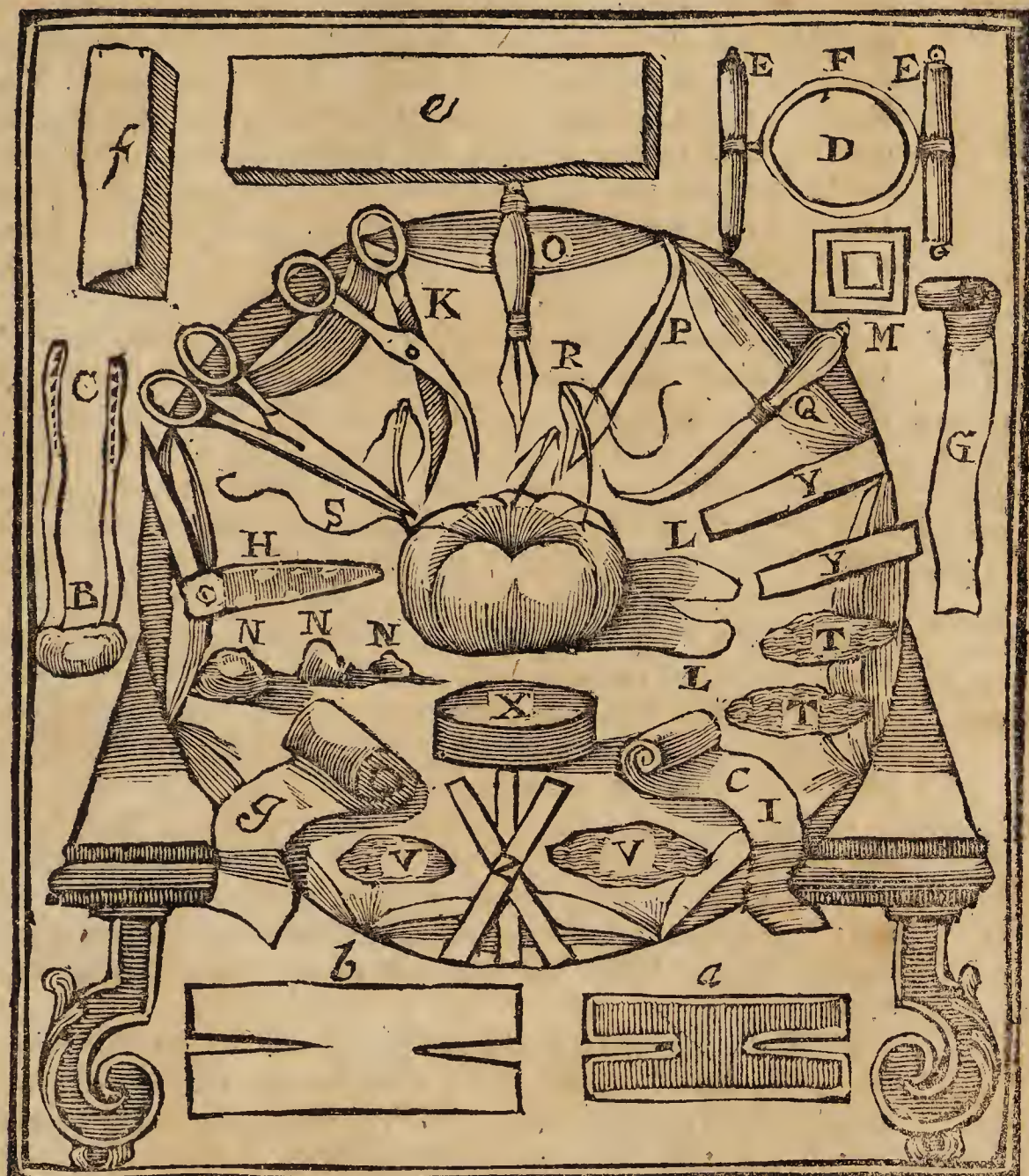
If instead of a Vein the Chirurgeon opens an Artery, or he
 happens to open both the one and the other, which he will
 soon know by the impetuous flying out of the Blood, he is not
 to run besides himself, nor let the Patient discover that he is in
 any Confusion, because 'tis not impossible to remedy it, even
 without the Patient's so much as perceiving it. To prove my
 Assertion, and instruct the young Chirurgeon, I shall here re-
 port what I have seen done by my Master, with whom I serv'd
 my Time, on a like occasion. He went to bleed a Lodger in
 the

the College of Harcourt, carrying me along with him to hold the Candle: He open'd the Artery, from whence the Blood flew like an Arrow out of a Bow to the other side of the Bed, making a very wide Arch, it sprung out and rais'd in the place a sort of Orange-vermilion Scum, and in a great quantity. My Master perceiving that 'twas the Artery which was open, was not at all surpris'd, but told the Patient that his Blood being inflamed, 'twas requisite to take away a large quantity, in order to calm its raging heat; he called for a second Plate, and let the Arm run 'till he found the Patient begin to faint. Whilst the Blood was issuing out, he had put a piece of Mony into a Bolster, and called for a second Band. In proportion to the Patient's fainting, the Arch, which the streaming out of the Blood made, began to decrease and abate; having taken off the Ligature, and the Patient swooning away, the Blood stopp'd. He took that moment to apply his Bolster, and bind the Arm tighter than ordinary, using two Bands; and folding the Arm on the Patient's Stomach, he fasten'd it to his Waistcoat for fear he should extend it; he then threw Water on his Face, made him smell to Vinegar, and recover'd him from his Swoon. He took care to have the Blood thrown away before he went away, and earnestly recommended to the Patient the keeping his Arm very still, telling him, that if he unbound his Arm his Blood was so furious that he would be dead before 'twas possible to help him. In the Evening, pretending to be sent for to a Patient in the Neighbourhood, he visited him, and found he had been very obedient, but was tired with the Posture in which he left him: The next day he gave him another visit, and though the Patient complain'd that his Arm was very hard bound, he yet perswaded him not to touch it 'till the third Day; when, after unbinding it, he laid on a fresh Bolster, and apply'd another Ligature for the greater security; and the Orifice cicatris'd as it would have done if it had been the Vein which had been open'd, and the Patient thought he had never been better bled in his Life.

I shall conclude this Article of Bleeding with relating the Relation of Story of one *Damascene*, who came to the Court in the Year *a Quack*, 1669; which will shew you that in all times there has started *an Enemy* up a sort of People which have attack'd this great Remedy, and *to Bleeding*; that all the Efforts which they have made to destroy it, have only serv'd to discover its usefulness and necessity. This *Damascene* was a handsom well made Fellow, genteely dress'd in a Robe like a Physician; he talk'd well, and was very bold, to say no more. He set up to condemn Bleeding, alledging, that to bleed was to Assassinate a Patient, because, according to him, it took away the Blood which is the Treasure of Life. He asserted, that the Moon govern'd our Bodies, and that 'twas she who ought to be consulted in our Distempers, and that there were no Distempers so obstinate as he did not cure
by.

by the *Opiates*, Antidotes and Elixirs, which he gave at certain times of the Moon. He printed a little Book to establish his Assertion; he dined with the King, and at his Majesty's Table boasted the Wonders which he had done; he follow'd the Queen to her Collation in the Garden in the Bowling-green, where he made himself to be hearken'd to like an Oracle. A Lad who was Apprentice to Mr. *Stuart* an Apothecary, being one Day by, took the assurance to speak, and told the Queen that he could not bear that such a Buffoon as that should impose on her Majesty; that he was a Stage-Andrew and an ignorant Fellow; that he had seen him mount the Stage at *Rennes* and *Nantes*; and that he knew none of those Plants he talk'd of: To prove which, he went into a Thicket just by, and gather'd seven or eight Species, which he brought into the Queen's Presence, which *Damascene* could not name. The number of the Spectators was large, as it generally happens on such Occasions, by reason there is alway a Crowd ready to fall in with a new Notion, and more at the Court than any where else: But his Success not answering his Promises, with regard to several Patients which entrusted themselves in his Hands, and the King being satisfied that all his Proceedings were barely founded on downright Arrogance and Impudence, gave order to banish him the Court, after he had continu'd there four Months. Two of the Provosts Guards seized him one Morning, and conducted him a Mile from *St. Germain's*, and leaving him there, they inform'd him that the King had forbidden his return on pain of being Condemn'd to the Gallies:

FIGURE XLIV. For the ANEURISMA.



THE word *Aneurisma*, or *Anefrisma*, is derived from the Greek word *Anefrinin*, which imports to extend or enlarge, from its being a soft Tumour yielding to the touch, and the Aneurisma caused by the dilatation of the Artery, or extravasation of the arterial Blood.

This Definition informs us that there are two sorts of *Aneurisms*, one of which is produc'd by the dilatation of the Artery, which extending and enlarging it self by slow degrees forms a Purse of the arterial Blood; the other occasion'd by the Incision or Rupture of the Artery, in which cases also the Blood issuing out of the Vessel, diffuses it self into the neighbouring Parts.

Those

Causes of the Dilatation of the Artery.

Those produc'd by Dilatation, proceed from two Causes, the one internal, and the other external. The first happens when a corrosive Humour has partly eaten off the external Membranes of the Artery, so that the internal being too weak to resist the impulse of the Blood, are oblig'd to stretch themselves, and yield to the continual Pulsations of the arterial Blood: The second is when the point of the Lancet has prick'd the superficial part of the Artery, when the above-mention'd Pulsations not finding the course of the Channel so strong in that place, force the internal Membranes to yield, and their extension forms a Tumour which issues out of, and transcends the Bounds of the arterial Pipe.

Causes of the Aneurism, occasion'd by Incision or Rupture of the Vessels.

Those *Aneurisms*, occasion'd by Incision or Rupture, are always to be ascribed to an external Cause, as a Wound by the Point of a Sword, or that of a Lancet, which making an Orifice in the Body of the Artery, opens a passage to the Blood which spreads it self betwixt the Flesh and Skin: A Rupture may be caused by violent straining, or the shrieking Cries uttered during the Delivery of a Woman, which may produce the same Inconveniencies with the Incision of the Artery.

Places where they happen.

Aneurisms happen to all Parts of the Body, the Head, the Neck, the Breast or Belly; they sometimes in these Parts grow to a prodigious bulk; but as I propose only here to speak of those which result from Bleeding, I shall confine my self to the Operation proper to them.

Their Signs

In Bleeding we discern that we have open'd an Artery, by the impetuosity with which the Blood flies out of the Vessel, and other Signs which I have hinted in my Discourse of Bleeding: The Chirurgion in this case is to endeavour to appear unconcern'd, and follow the Example of my Master on the like occasion.

But if the Patient or Spectators perceive it, or the Blood does not spring out of the Artery in a full stream, and the Chirurgion finds by the Elevation which begins to shew it self around the Orifice, that the Blood begins to spread betwixt the Flesh and the Skin, he is then sincerely to own his Fault, and clap his Thumb on the Orifice before much Blood is spilt, and without too much alarming the Patient he is yet to acquaint him in what danger he is in, in order to render him more submissively obedient to the necessary Rules to which he is to be subject, in order to avoid the ill Consequences.

Instruments to close the Artery. Disposition of gradual Bolsters.

Whilst the Chirurgion holds the Artery at his Command under his Left Thumb, with his Right Hand he takes off the Ligature: He causes to be prepar'd Bands, Bolsters, and wet Paper to make a Stopple, if we cannot readily get a moiety of a dry'd Bean: We are then to lay along on the Artery a thick Bolster, and over that a circular one, over which he is to roll a Ligature, which he is to tighten with a press or screw. When he thinks the Compression strong enough to prevent the course of

of the Blood in the Artery, he takes off his Thumb, and whilst the Blood is thus stopp'd, lays on the Orifice a Stopple of wet Paper, or half a dry'd Bean, or a piece of Mony in the first Bolster, over which he lays a second a little larger, and after that a third, that by this gradation the Artery may be well compress'd: After which the Chirurgeon is to make use of one or two Ligatures, which he is to draw tighter than in case of ordinary Bleedings. The Arm being well bound up, he again claps his Thumb on all the Bolsters before he takes off the Wrench; which done, he lays on a narrow, thick and long Bolster over the Artery along the Arm, and over that fixes a Band of three Fingers breadth, which by several circular rollings is to reach from the Elbow to the Shoulder; and by that means stop the Blood, without allowing any *Aneurism* to supervene.

This *Apparatus* thus fix'd, we are to bleed the Patient several times on the other Arm; and that which has been bled is to be plac'd in a proper posture, not too much bent, nor too strait extended, with the Wrist and the Hand higher than the Elbow, and laid on Pillows, without obliging it to any Motion. The *Apparatus* is not to be taken off 'till several Days afterwards, at least unless the Arm swells much; or by some sign we are inform'd that notwithstanding this Bandage the Blood continues to escape out of the Artery; in which case we are to resolve on the Operation, which cannot be deferr'd without hazarding the Life of the Patient.

We are not to follow the Example of a certain Chirurgeon, who having open'd an Artery of one of the King's Officers, thought, that because he had very well Bound up the Arm, and render'd himself Master of the course of the Blood, that no ill Consequence would happen: 'Tis indeed true, by reason of the tightness and thickness of the Bandage the Blood did not come through, but still escap'd out of the Artery, and slid towards the upper part of the Arm, which it fill'd to that degree, that it was swell'd to an extraordinary bulk. This happen'd four Leagues from *Versailles*, whither I was call'd to perform the Operation, and was forc'd to open the Skin along the Arm, in order to draw out above four Pounds of Blood, which was coagulated betwixt the Skin and the Flesh from the Elbow to the Shoulder around the whole Circumference of the Arm.

In case of an *Aneurisma*, occasion'd by the dilatation of the Artery, the necessity of proceeding to Operation is not so pressing, as when caused by Incision; by reason that Chirurgery proposes to us means to spare it, which the Chirurgeon is to try before he resolves on the Operation.

Case in which the Operation is not so pressing.

A Chirurgeon may perceive that he has touch'd the Body of an Artery, when in bleeding the *Basilica*, he feels a small resistance at the point of the Lancet more than is ordinary observable. When this happens he is to fear some ill Consequence.

to avoid which he is to lay on a somewhat thicker Bolster, which may keep the Arm bound for several Days, and recommend to the Patient the keeping his Arm still, without using it; and, for the greater Security, the Bolster is to be dipt in Styptic Water.

Frequently the Patients grow impatient under the wearing the Ligature too long; when, if the Artery is superficially prick'd, the Blood by continual pulsation causes the Extension of the weaken'd Place, from whence there proceeds a small Tumour, which at first is no bigger than a small Pea, but growing daily extends to the size of a Hazel-Nut, or sometimes a Walnut. If the Chirurgeon is inform'd of it when it begins, he may easier cure it than when 'tis grown to a degree of bigness: He discovers the Tumour to be *Aneurismatical* by the touch; for he there feels a Pulsation, like that of the Pulse, and if yet but small, it disappears by compression, because it forces the Blood to return into the Body of the Artery. Some pretend that the pouring very cold Water, or something else very cold on the Tumour, is a means to cure it; styptic and astringent Remedies are proper, it being our business to contract or close the too much extended Fibres of the Tunics of the Arteries: But they will not have any great effect, if not assisted by Bandage, which is to be worn for some Years.

The Abbot *Bourdelot*, first Physician to Monsieur the Prince, invented a Bandage to cure himself of an *Aneurism*, which happen'd to him after bleeding: This he called a *Ponton*; it consisted of a round steel Plate or Shield A made for that purpose, and cover'd with Cotton and Leather like the Bandage for Ruptures. This small Plate is provided with the Straps B, which are to run above and below the Elbow, and to be fasten'd on the inside of the Arm, on the middle of the flat part of the plate: The little holes in these Straps, mark'd C, are to tighten and slack the Shield or Scutcheon at pleasure; and though this plate is made to press the Tumour, it has yet a small Channel left on purpose to allow the arterial Blood the liberty of running under it. Whence is derived its Name of *Ponton*, it being a sort of *Pont*, that is, Bridge, which does not obstruct the passage of the Water of a River: The Patient is to wear it for the space of a Year, and the Tumour diminishing daily, at the extirpation of that time he will find himself perfectly cured.

Invention
necessary to
a Chirur-
geon.

This instance may hint to the Chirurgeon that he ought to be fertile in Invention, that he is to endeavour to devise proper Bandages and Engines to cure his Patients without Operation; and if he will make use of those invented by our Predecessors, he is to augment or diminish them according as the dispositions of the Diseases require. But when he has exhausted all his Industry, and the Tumour will not yield to his Remedies, he is then to proceed to Operation, which is to be performed with
all

all the precautions necessary to render us Master of the Blood, that the Patient don't dye under the Operation, as it sometimes happens.

How skilful soever the Chirurgeon may be, and though he *He is to mi-* has perform'd this Operation several times, he is to distrust his *trust him-* Skill and Address; because, that during the time that the Tu-*self.* mour is open, he may be surpris'd by the issuing out of the Blood, which flies out impetuously; and in that moment he may lose that presence of Mind which he stands in need of, in order to put a quick stop to the fury of the Blood, wherefore I advise him not to undertake it without calling one of his Brethren, able to assist him with his Advice, and help him in case of need in this nice and hazardous Operation.

Before the Operation we are to prepare all things necessary, Apparatus as well as the Instruments, because we must be provided for *for the Ope-* the Dressing without being put to ask or wait for any thing: *ration to be* We must have ready a Press or Wrench composed of a Liga-*perform'd* ture which goes twice round, and of one or two Sticks of the *on the A-* thickness and length of a Finger, an abscess Lancet, both strait neurism. and crooked Scissars, an Incision Knife, a Worm, curve Needles threaded with a small wax'd Thread, vitriol Buttons in case of need, several small Bolsters of different length, a large quantity of Lint, astringent Powders, a Plaister, large Bolsters, two Bands, and, to conclude, such an *Apparatus* as we find describ'd in the XLIVth Plate fix'd at the Head of this Chapter.

Before the Operation the Patient being placed in an easie El- *Situation* bow Chair, and in the most commodious Posture for the Ope- *of the Pa-* rator, against the Light, a little leaning backwards, and the *tient and* Arm extended as for bleeding, the Chirurgeon is next to place *Assistants.* the Servants, of which there are to be at least four. If the *Aneurism* is in the right Arm, the Operator is to set the first of them, which is he on whom he most relies, at his Left-hand, to grasp the Patient's Arm in order to compress or hold down the Artery when necessary; the Wrist he gives to be held by the second, who with one Hand holds that of the Patient, and with the other clasps the Wrist fast to hinder his withdrawing or moving it during the Operation, and this Servant is to be at the Operator's Right-hand. The third is to stand before him, and hold a Basin, on which is to be laid all the *Apparatus*, that he may at pleasure take whatever he wants, or lay down any thing after using it: And the fourth is to be ready to obey the Orders of the Operator. There must be on a Table a lighted tallow or Wax-Candle, ready to be brought to the Chirurgeon if he wants light.

All these Necessaries thus disposed, before he opens the Tu- *How to re-* mour the Chirurgeon is to consider how to keep the Blood un- *gulate the* der, and prevent the issuing out of more of that Liquor than *issuing out* he would have: This is to be done three ways; by Ligature, by *of the Blood* the Hands of a Servant, and by the Wrench.

The old way.

The Ancients made use of a great crooked Needle threaded with a strong Silk Twist, which they ran across the Arm, beginning with thrusting it in below the Artery near the Bone, and drawing it out again through the middle of the *Pricipital Muscle*, and by that means taking hold of the Artery with the Noose of the silk Twist, they bound it over a Bolster hard enough to stop the course of the Blood in that Artery; this method seem'd so cruel to succeeding Chirurgeons, that they quitted it, contenting themselves with the Hands of a Servant, which they substituted in the stead of this so very troublesom and painful Ligature.

How to retain the Blood with a Servant's Hands.

Those who have made use of a Servant, have always chose one whose Hands were strong and robust; they caused him to grasp the Arm betwixt his two Thumbs above, and his eight Fingers under it, the extremities of which press'd the Body of the Artery in its whole length, and relying on this Servant they open'd the Tumour. They affirmed this way to be very commodious, by reason that the Artery being opened they could allow the Servant to slacken his Hands a little, in order to discover, by the springing out of the Blood, exactly the place where the Orifice is, in order to lay on the Button, and make the Ligature; and then fixing their Fingers in the same place, they finish'd their Operation. This is the easiest, but not the securest way, for the Hands may tire by a long compression and the duration of the Operation, and before we have substituted another Person in the place of the former, the Patient may lose a great quantity of Blood, and the Operation be interrupted or perplex'd: Which has put the Moderns on inventing the Wrench or Press at present used, as well in *Aneurisms* as Amputations.

Of the Wrench or Screw.

This sort of Ligature D, is called in *French* a *Tourniquet*, because that by turning the two little Sticks E E, run betwixt the Arm and the Ligature F made of Tape, we draw it as hard as we please: And 'tis in this manner that the Carriers with a Stick draw tight the Cords which fix and settle the Packs on their Carts and Waggon. We fix on the Arm the circular Band G, in order to prevent as much as possible Pain and Mortification of the Skin; when we have turned it enough, and thereby sufficiently strained the Ligature, we entrust it to be held by a Servant, who may tighten or slacken it at the pleasure of the Operator. This Instrument was invented Thirty Years past, during the Siege of *Besançon* in the *Franche Compté*, by one of the Army Chirurgeons; and since that time has always remain'd in use.

The opening of the Tumour.

This Wrench being placed two or three Fingers breadth above the bending of the Elbow, the Chirurgeon with the large Lancet H opens the whole length of the Tumour, beginning at its lower part; if he does not find it sufficiently laid open by the Lancet, he seconds that effort by some Cuts with the straight

straight Scissars I, or the crooked ones mark'd K, either upwards or downwards, according as he thinks fit; then having thrust a Finger or two into the Tumour, he empties it of all the coagulated Blood he there finds; he cuts away the Bridles or Stays which he finds there, and having removed all that hinders him, or is in his way, he orders him who holds the Wrench to loosen a half turn, that he may discover the situation of the Orifice in the Artery, which sufficiently shews its self by the impetuous springing out of the Blood. The Aperture of the Artery being found, the Chirurgeon is to consider how to stop the Blood, and the Symptoms to which he finds the Patient disposed, are to determine him which of the three Methods he is to take to compass that end.

The first of which is with chew'd Paper to make the two *First way* Stopples or Tents L L, and fix them on the Orifice of the Ar- *of stopping* tery; or else the little Bolster M, dipt in some Styptic Water, *the Blood.* and lay it directly on the body of the Artery, and above that several others a little larger than each other, and by those means to stop the Blood.

The second is the laying on the open Artery a Caustic, or *Secondly* one of the Vitriol Buttons N N N, which by their Scarification *by Vitriol* stop the Blood, pursuant to the usual Practice in Amputations *Buttons.* in some Hospitals, in which the Chirurgeons aiming solely at dispatch, are wholly unconcerned at the ill effects of these Ingredients.

The third is with the Penknife O, or the Gum-Lancet P, *Thirdly by* to dissect the Pipe of the Artery, and having raised it with *Ligature.* the crook'd Knife Q, to pass thro' under it one of the Needles R R, threaded with the coarse waxed Thread S, which is to be tied above the Orifice of the Artery, and which we are so to close, that the Blood cannot run thro' the Pipe. We are to leave the ends of the Thread long enough to hang about four Fingers breadth out of the Wound. 'Tis needless to lay any small Bolster on the knots of the Thread, or make any second Ligature below the Wound in the Artery; for when our Predecessors did so, they were ignorant of the circular motion of the Blood; but, at present, we being certainly convinced on that Head, this Knowledge improves our Operations, by bringing us to retrench several useless and superfluous Circumstances.

Of these three ways of stopping the Blood, the first is preferable to the two others, because it preserves the Artery, and is aimed at no other end than the cicatrising the Wound; and if the case will not admit of it, the Ligature is to be preferred to the Caustics, and is accordingly made use of by the ablest Practitioners at present. *Choice of the Methods.*

After the Performance of the Operation either of these three *Dressing of* ways, the Patient is to be dress'd. If we take the first or the *the Pati-* second way, we are to stop the Wound very well with the *ent,*

Linten Stopples T T, and the Pledgets V V, and plentifully use the Powders in the Box X, in order to hinder the issuing out of the Blood; but if we apply the Ligature, the Wound is to be barely dress'd only, by reason we are in that case secur'd against a possibility of the Blood running out. In the first Days we are to apply Pledgets cover'd with some Unguent, in the Composition of which the Astringent Powders enter; we then lay on the long Bolsters Y Y, and then the others marked Z, a-cross one another in form of an X, the better to fasten them, then the long Plaister *a*, both ends of which are slit, then the Bolster *b*, of the same Shape, and over them all the Bandage *c*, *d*, which is to be roll'd circularly above and below the Elbow, and a-cross it self on the Wound; this Bandage is very like that us'd in Bleeding, only the Band is broader and longer, and does not end in a knot. We are also to lay two Bolsters dipt in *Oxyeratum*, one *e* on the Wrist, and the other *f* on the Arm, and over them we are to roll the Band *g*, circularly above the Wrist, continue on up to the Shoulder, and end by winding it once about the Body, observing to lay on the Arm along the Artery, a long thick Bolster, that by it the compression being more forcible in that place, may hinder the too violent Flux of the Arterial Blood towards the Ligature.

*Posture in
the Bed.*

We are then to lead the Patient to his Bed, where we are to lay him in a posture a little raised, and his Arm half bent on a Pillow, and tho' he has been bled before the Operation, he is yet to be several times bled again, to prevent the impetuous Flux of the Blood to the part affected: We place by the Patient a Servant, who Day and Night is to hold fast the place of the Operation, to prevent the irruption of the Blood; which it being impossible for one alone to resist, there are to be two or three which are to perform this, alternately relieving one another.

*Diet of the
Patient for
the first
Day, and
care of him
afterwards.*

On the first Days we are to oblige the Patient to a very sparing Diet, that he don't produce too much Blood; we are to be vigilant over whatever may happen, and not to take off the Dressing before the Expiration of three Days; and when we do, to leave the last Bolsters and Stopples, that is, those which touch the Artery, in expectation that they will fall off themselves; withal we are to observe every time we dress the Patient, to cause his Arm to be grasp'd by a Servant, in order to press the Artery, as we have already hinted.

We are not to abate the most minute particular, which can contribute to keeping the Blood under; for even when we think our selves secure, an unforeseen Flux of that Liquid, which frequently happens, obliges us to renew the Operation, and may hazard the Life of the Patient before he is helped; for which reason nothing is to be neglected, nor any firm Promises made of a perfect Cure. We are in proportion to the closing and filling up of the Wound with Flesh, to extend the Patient's

Arm

Arm a little more, for if we suffer the Wound to cicatrise with the Arm bent, the Patient will never be able to hold it strait, but though cur'd of his *Aneurisma*, will still remain Lame.

'Tis very surprising to observe the strange prepossession of the Populace, who to this Day believe, that the Chirurgeons are oblig'd to allow a Pension to those whom they hurt in Bleeding. A celebrated Chirurgeon which has been dead about thirty three Years, whose Name is reverenc'd amongst us, and who having acquir'd a greater Reputation for Bleeding than any before him, own'd that in one Year he open'd eleven Arteries. None could charge him with bungling, none Bleeding better than he; but 'twas to be ascrib'd to his Bleeding so many, and in difficult Cases being sent for all over *Paris*, to bleed those Arms which all others refus'd, so that 'twas not possible for him to escape this misfortune, which would have happen'd more frequently to any other besides himself: If then he had been oblig'd to give Pensions, the whole Estate which he got by forty Years labour would scarce have been sufficient to have paid them.

Opening
the Artery
hard to be
avoided.

Waiting on the Duke of *Burgundy* into *Germany* in the Year 1703, we pass'd thro' *Reims*, in which place was shew'd to Monsieur *Duschene*, and my self, a Maiden of about thirty Years, who was afflicted with Convulsions all over her Body, which we were told resulted from her being bled, and for which the Chirurgeon was threaten'd to be rendred responsible: Some of his Brethren of the same Profession being back'd by some Physicians, set this young Woman upon him to demand a Pension; and to that purpose there was an Indictment drawn up against him with their Reports, which charg'd him with pricking a Tendon. I examin'd her Arm, and finding the Skin loose on the Tendon, I assur'd them that it was not touch'd, by reason that a Tendon exfoliates like an uncover'd Bone, on which there grows a Flesh, which uniting it to the Skin fastens them together, as there proceeds from the exfoliated Skull, which cicatrising with the hairy Scalp agglutinates them together. But notwithstanding the Report which Monsieur *Duchefne* made, the Prosecution went forward, and was by appeal removed to the Parliament of *Paris*; I gave in my Report, which being found conform to that of the Physicians and Chirurgeons appointed by that Court, the Chirurgeon got the Day, and by this Sentence found himself rid of the Plague of a whole Nest of Female Zealots, who having espous'd the young Woman's Cause, had combin'd together to ruin him out of Charity.

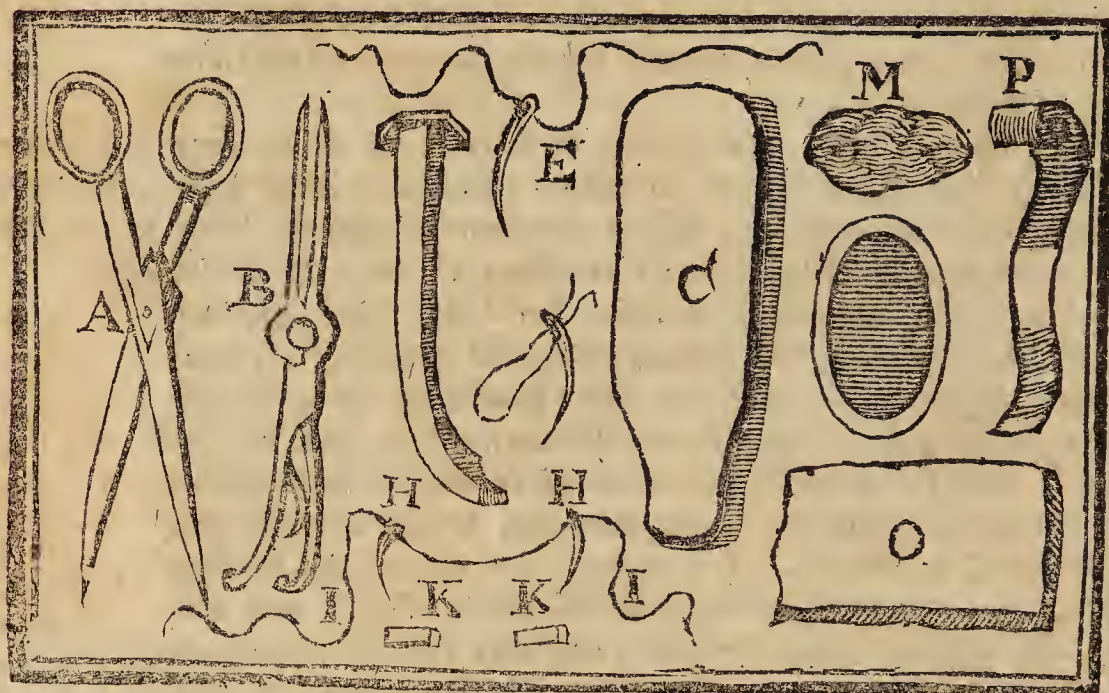
Relation of
a Puncture
of the Tendon.

I don't pretend to assert, that Chirurgeons may not commit some Faults. Where is the Man that mayn't be deceiv'd? Where is the Profession in which no Error is committed? And why are none but the Chirurgeons oblig'd to pay the damage

The Chirurgeon
frequently
excusable.

with Interest; There are other Professions whose Faults are cover'd by the Earth, and of which no mention is made. The Judges themselves, who Arbitrarily decide the fate of Men, are they not sometimes mistaken, and give an unjust Judgment against the one, and make him lose his Cause, and condemn the other, though Innocent. Since then no Man but may commit blunders, why must not every one share with the Chirurgeon in his misfortune? Is he not sufficiently punish'd when Guilty of a Fault, by the loss of his Reputation and Practice; but must he still be Persecuted by Persons, who will continually persist in forcing themselves on him as Pensionaries.

FIGURE XLV. For the SUTURE of the TENDON.



Of the Suture of the Tendon.

THIS on the Hand that the Sutures of the Tendons are most frequently practis'd, because that part is wholly full of these Nervous Organs, destin'd as well for the direction of its Motions, as those of the Fingers. This part of Man also serving as a sort of Buckler against whatever attacks him, it consequently receives more Wounds than the others, which don't so frequently stand in need of the Operation of which we are speaking.

Restoring of this Operation.

When Monsieur *Bienaise*, one of the most famous Chirurgeons of *Paris*, began the Performance of this Operation about fifty Years past, it pass'd for his Invention; of which he reap'd all the Honour, and it all the Charms of Novelty; but on Examination, it appearing that it had been talk'd of above two thousand Years before he hit on it, it was consequently discover'd

ver'd that he only reviv'd an Ancient Practice of the *Greeks*, and that *Guido* and several others had practis'd it. 'Tis indeed true, 'twas grown obsolete, he brought it into use again, and we are oblig'd to him for having try'd it on his Dogs, after that employ'd it on Men, and then encouraging us to the performance of an Operation, which prevents the laming of a great many wounded Patients.

He performed the Suture of the Tendons in old as well as green Wounds, that is in those of fifteen or twenty Days; but not on those which were perfectly cicatrised, as some would perswade us, it being in that case impossible to bring the ends of the Tendons near one another, they being agglutinated and united to their neighbouring parts.

The Tendons are not so easily sewed up as other Wounds, which only require the drawing their Lips together, and uniting them by the help of a threaded Needle; but in Wounds of the Tendons, the stitching is to be preceded by an Incision, in order to search out one of the ends of the Tendon, which is always fasten'd to the body of the Muscle; for that which sticks to the Bone it scarce ever separates. For instance, in case of a transversal Wound on the back of the Hand, which has cut the extending Tendon of the middle Finger, if the Wound be either recent or old, the Operator is to begin with making a small Incision longways with the point of the Scissars A, at the upper part of the Wound to search out the end of the Tendon, which the body of the extensory Muscle has drawn upwards, and with the Forceps B to pull it down, and bring it to the other end, in order to perform the Suture; and to facilitate this Aproximation, we are to keep the Hand extended on a little Palate C, which we are to fasten to the Palm of the Hand, to keep it continually open.

Incisions preceding the Operation.

Authors propose to us two ways of performing this Suture, the first is with the Needle D, threaded with a single wax'd Thread E, run thro' one end of the Tendon from without inwards, and thro' the other from within outwards, making but one Stitch, and tying the two ends of the Thread on a small round Bolster. This Suture is soonest performed, but is by some disliked, they alledging that the little Bolster, on which the knot is fasten'd, deprives us of the Power of seeing whether the two Tendons are well join'd together; and therefore they prefer the other way, which is to make use of the Needle F, threaded with the double Thread G, in form of a Loop, and to pass that in the same manner as the former, thro' both the Extremities of the Tendon; to fix a small Bolster in the Loop, as usual in the feather'd Suture, and another betwixt the two Threads, on which the knot is to be made; betwixt these two Bolsters we see whether the two ends of the Tendon are well united, and are certain, that the Patient cannot be lamed if the two ends cicatrise in this manner.

Two ways of Suture.

There

*The third,
the most
secure way.*

There is a third way which I have seen practised by Monsieur Biepaife, which to me seems more secure than either of the former: 'Tis with the two Needles HH, threaded with the same Thread II, both which are to be run through on the side of each other from without inwards, and then re-passed from within outwards through the other end of the Tendon, and to be tyed on the little Bolsters KK, when we find the Extremities sufficiently approximated. What ought to give the Preference to this way, is, that two Threads better unite and rejoin the Tendon than one only, and consequently the Closure is thereby more easily made.

*The sort of
Needles
and Thread.*

In the Performance of this Suture, we are to make use of little round Needles, that the Orifices we make in the Tendons may be very small, the flat ones making them too large. In piercing the Ends of the Tendons, we are to sustain them by the end of the curve Tube L, and take care that the Thread be wax'd, and so fine as to run easily through the Passage made by the Needles, without obliging us to pull it hard, or force

*Precau-
tion in tying
the Knot.*

it through: Also, when we knot or fasten the Thread, we are to force the ends of the Tendon a little over one another, that they may not separate, though the Suture should somewhat slacken by the slow involuntary Motions which the Muscle may produce.

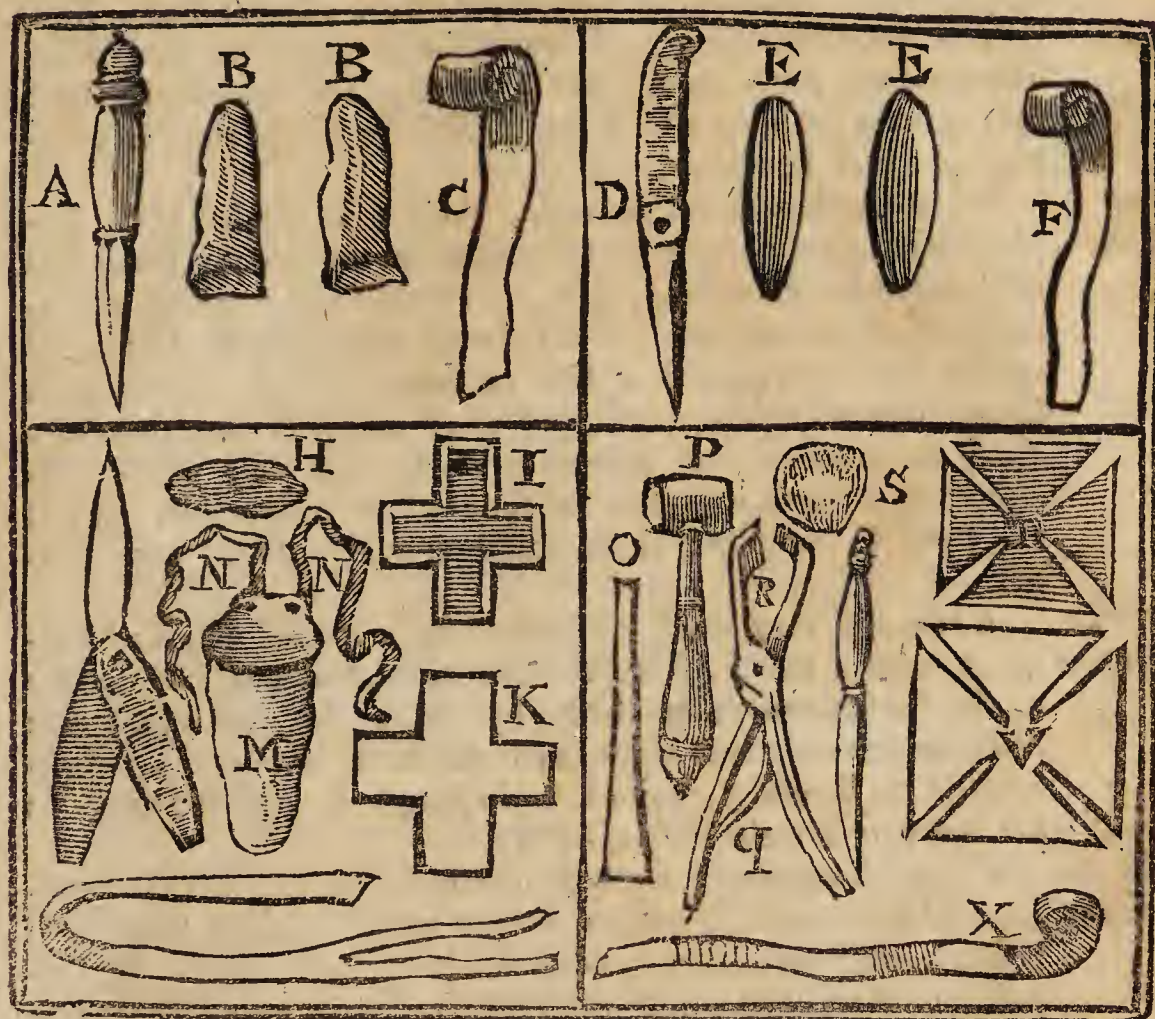
*Of the dress-
ing.*

The Suture thus finished, we are to lay over it the Bolster M, cover'd with *Arcaus's Balsam*, or that of *Pernu*, if to be had; then after laying on the Plaister N, we are to add the Bolster O, all which are to be fastened by the Band P, to be circularly roll'd about the Hand: The Reason of the Use of Balsamics in these Cases, is, to prevent the too great Suppuration of the Wound; and above all, we are to keep the Palate Q under the Hand, until the Wound is perfectly cicatrised.

*How the
remaining
Callosity is
to be treat-
ed.*

After cicatrising there sometimes remains a little Callosity on the Suture, which is to be rubbed over with a little Oil of Sweet Almonds, or of Earth-worms. The Chirurgeon is to bend the Hand by little and little, and insensibly bring it to the Performance of its proper Function without Violence, causing the Patient for some time to wear a sort of Mitten to defend his Hand against the Cold.

FIGURE XLVI. For the OPERATIONS performed on the FINGERS.



There are usually four different Operations performed on Four Operations on the Fingers: The first of which is the Separation of those rations on join'd together; the second, the straitning those which are the Fingers crooked, or stand a little bent; the third, the opening the *Panari*, otherwise called the *Paronychia*, the *Felon*, or *Whitlow*; and fourthly, the Extirpation of bruised or gangreen'd Fingers.

The Fingers are two ways join'd together, either by Union, or Agglutination; what we call Union, is, when the Child, at its coming into the World, has its Fingers join'd to one another; which, from the first Formation, proceeds from the Disposition of the Matter, or the Force of the Mother's Imagination, as do several other Ills which Children bring with them into the World. If after Ulcers, or some violent Exustion, in which the Skin of the Hand being wholly flay'd off, the Fingers are negligently suffered to stick and join together; this is call'd an Agglutination.

Both

How the
Operation
is to be per-
formed.

Both these Accidents are to be remedied by the Separation of the Fingers with the Penknife A, withal taking care that we don't take any thing from one, and leave it to the other. If the Union is perfect, that there is little or no Space betwixt them, the Chirurgeon is to shew his Dexterity in patiently and slowly cutting that only which joins them together; but if they are only join'd by a Membrane like a Goose's Foot, he is betwixt each two Fingers to cut off and take away the Membrane which joins them, that after they are cicatrised, there may remain nothing which can possibly interrupt the Performance of their Functions.

Dressing
and Ban-
dage.

When the Separation is made, we are to hinder their Agglutination afresh, in order to which we are to put small bits of Linnen betwixt the Fingers. We may make use of a Bandage call'd the Gantlet; but that being very long in fixing, by reason that we are with a Band of five Ells long, to roll each Finger several times round one after another, we therefore chuse to make use of several small Linnen Fingerstalls BB, dipped in vulnerary Water, or some other desiccative, and of the Band C, which is to be roll'd circularly about each Finger.

Of crook-
ed Fingers

A Hand is very much disfigured by bent and crooked Fingers; besides which, 'tis also very incommodious and uneasie to the Person which has them, by reason that not being able either to extend them strait, or bend them, he is unable to help himself on several Occasions, and though he can in some, 'tis yet but very lamely and awkwardly.

How to re-
dress them.

If the Chirurgeon is apply'd to in order to help this Deformity, and endeavour to enable one or more crooked Fingers to perform their ordinary Functions, he is to examine the Disposition in which he finds the Fingers, before he promises any Cure, or begins to attempt it; for they may be so disposed, that 'tis impossible to redress them. If the Indisposition is an *Anchylosis* in the Joints, he is to soften it by bathing it in Tripe-broth, or rubbing it with Ointment of Marshmallows, or other emollient Drugs. If by an ill-managed cicatrising, the Finger is deprived of its Use, 'tis to be slackened or unbridled by several Cuts of the Incision Knife D, after which we are to apply two small, strait, wooden Splinters E E, the one above, and the other below the Finger, to bind it with the Band F, and every day to tighten it more and more, 'till the Part has re-assumed its natural Figure.

Of the Pa-
naris.

The *Panaris*, called by the Greeks the *Paronychia*, derived from *Para*, against, and *Onyx*, a Nail, is a Tumour which grows at the Extremities of the Fingers, and is commonly called a *Felon* or *Whitlow*; 'tis caused by a fiery, sharp and corrosive Humour, which eating into the *Periosteum*, the Extremities of the nervous Fibres and Flesh scarrifies: 'Tis known by its great Tension, strong Pulsation, sharp Pain, burning Heat, and

and scorching Fever, which always accompany these sorts of Tumours.

Our Predecessors distinguished two sorts of *Panaris*, one whose Matter was contained betwixt the Skin and the *Periosteum*; and the other, whose Humour is fix'd betwixt the *Periosteum* and the Bone. But this last Species is purely imaginary, it being wholly impossible for the quantity of Matter which we see come out of it, to be contain'd within the space of less than the sixth part of an Inch. But 'tis always betwixt the Skin and the *Periosteum*, and the whole end of the Finger is soak'd in it; and if we frequently find the Bone uncover'd, 'tis because not only the *Periosteum* is corroded by the acrimonious Matter, but also the Ligaments which fasten the Bone of the third *Phalanx* to the second, which occasions the falling of the last Bone by the Suppuration.

Effects of the Panaris

Of all Imposthumes, the *Panaris* is the most painful, because the Extremity of the Fingers not being able to stretch sufficiently to contain the Matter gather'd there, that occasions an excessive Tension, which causes an insupportable Pain, which being augmented by the Corrosion of the Matter, and working on the Extremities of the Nerves which end there, causes it self to be felt with such Violence, that it does not allow a Moment's Repose; and indeed we cannot hinder the Patient complaining, considering the great Torment which we see him labour under.

Its Painfulness.

These Tumours are, with the utmost haste, to be brought to Suppuration by the strongest maturing Remedies, such as Sorrel, Lilly-Roots, Leaven, Pigeon's Dung and *Basilicon*, of which we are to make little Cataplasmes, which are to be frequently renewed, because the violent Heat of the Tumour soon dries them. Sometimes it gangreens, by reason that the Arterial Blood is hindered coming thither by the too hard Tension of the Part. Wherefore we are to open it at first, without staying for its Fluctuation, as well to avoid its Mortification, as to procure the Patient that Ease which he impatiently expects.

Suppurati- on is to be procur'd.

In order to this we make use of the Lancet G, which is somewhat larger than those used in bleeding, with which we make an Incision longways on the side of the Finger, that we may not run the risque of pricking the Tendon; which may happen, if we open it in the middle. Though after the Aperture there sometimes comes out nothing but serous Matter and Blood, the discharging the Part of it yet gives the Patient Ease, decreasing the extream Tension, dislodges the Matter when digested, and causes the hard Cores to come out as fast as they loosen.

How the Orifice is to be made.

After the *Panaris* is open'd, we yet continue the Use of ripening Ingredients; and if we judge the use of Cataplasmes unnecessary, we lay on the Incision the Pledget H, cover'd with

with

with *Basilicon*, and over it a Plaister I, of *Diachylon cum gummis* shaped like a *Malthese-cross*, to perfect its ripening; we then lay on a Bolster of the same Figure K, and fasten the whole with the Band L circularly rolled on, and stopped at the top of the Finger, which we afterwards put into a Leather Fingerstall M, made for that purpose, and provided with two narrow Strings N N, to tye on the Wrist: This done, the Hand is to be put into a furr'd Glove, or Muff, that the Heat may advance the ripening of the Humour, and the Arm is to be slung in a Scarf, with the Hand somewhat higher than the Elbow, lest it should hang down, and thereby occasion a Flux of Humours to the Part affected.

The Occa-
sion of
proudFlesh.

We are not to be surpris'd, if on the next Day after the Incision we find an Inflation of the Flesh occasioned by that Operation. 'Tis a Symptom which always happens, for the Flesh being fobb'd in the Humours, finds it self too hard press'd by the small bulk of the Finger, and therefore endeavours to make its way out, which it never fails to do through the Orifice already made in the Skin; 'tis of a livid Colour, and sometimes dissolves by Suppuration. But if it obstinately resists the Efforts of all Remedies, and continues to stop up and clog the Wound, 'tis to be cut off with the Scissars, which is to be done all at once, and consequently much more expeditiously than it can be consumed by a Caustic.

When the Matter has corroded the *Periosteum*, the Bone of the last *Phalanx* must exfoliate or putrifie, and being but small, it frequently comes out wholly, which cannot happen without the end of the Tendon which is fastened to it is separated, and its being corrupted and putrefied by this virulent Humour. In which case Nature separates the corrupted from the sound part of the Tendon, with the Assistance of the Balsamic and Spirituous Remedies pour'd on the Wound: The Chirurgeon is then no longer to make use of *Diachylon*, the *Unguentum Sanctum* being the excellent Remedy, by whose Assistance we obtain a perfect Cure of this cruel Indisposition.

Of the Ex-
tirpation of
Fingers.

The Extirpation of a Finger is performed on three Occasions; the first is, when by some Accident that Part is crush'd or bruis'd; secondly, when 'tis gangreen'd; and thirdly, when a new-born Infant brings with it into the World several supernumerary Fingers.

The Workmen employ'd in building, are daily in Danger of bruising their Hands and Fingers by the hewen Stones which fall on them, or their being pinch'd betwixt two pieces of Wood; the Sportsman runs the risque of breaking them, by the bursting of a Piece in firing, as I have frequently known to have happened. The first Intention of the Chirurgeon, who is call'd in these Cases, must be the Preservation of the Hand and Fingers, and never to cut them off, unless when there is not any hopes left of preventing their Mortification; for if there

Cases when
'tis to be
dispencced
with.

yet remain some Artery to convey Life, and any Vein to keep up the Circulation of the Blood, Amputation is not to be press'd, for that will always fail in timely enough, when we find the natural Heat has wholly abandon'd the Part, and utterly ceas'd communicating it self to it. But supposing a Finger to hang only by a little bit of Skin, or one of the Tendons, it must be separated from the Hand, by reason that its attracting the Tendon may draw on pernicious Accidents. In this case this Separation is made by a single Cut with a pair of Scissars, immediately after which the Patient is to be dress'd with proper Remedies.

A Finger may gangrene by the abundant Affluence of Humours having suffocated the natural Heat, as in the *Panaris*, or by its being stifled by severe Cold, as in a hard Frost: In these Cases the Chirurgeon is to endeavour to recall the natural Heat by Scarrifications, which are to be made on the Sides, for fear of touching the Tendons, applying to the Part camphorated Spirit of Wine, and vigorous spirituous penetrating Remedies; but if he find the Sense of feeling wholly destroyed by a *Gangreen*, or confirm'd *Sphacele*, he is to proceed to Extirpation. Some ancient Writers direct us to lay the Finger on a wooden Block, and with the Chissel O, driven by a Blow with the Mallet P struck on it, to sever it from the Hand. Others propose the Incisory Forceps Q, with which 'tis to be wholly cut off at one Effort. But both these Methods are at present disliked, as favouring more of the Butcher than the Chirurgeon; and we are by much better Reasons induced to extirpate the Finger, by cutting it off with the strait Incision Knife R, at one of its three Joints: The Apparatus is not so dismal, and the Operation is quickly over. We then apply to the Stump of the Finger, after having allowed it to bleed sufficiently, the Pledget S, cover'd with an Astringent, and over that the Plaister T, and the Bolster V, shaped like a Cross; all which are to be subjected to, and fastened by the Band X, which is to be suited to the remaining part of the Finger.

Cause and Cure of their gangreening.

How to extirpate them.

Dressing of the Wound.

Of supernumerary Fingers, what is practised in those Cases.

We often see Children born with more than five Fingers; but those which are supernumerary are never so perfectly form'd as the other; they are plac'd without the Hand, near the little Finger, generally have no Bone, and sometimes no Nails: They are like carneous Excrescencies which hang to the Hand. About six Months since I was sent for to see a Child which had one of these on each Hand: I immediately cut off one of them with my Scissars, referring the other to another time, which I afterwards also did when the first was cur'd, to avoid putting the Child to too much Pain at one time. If any bony or cartilaginous *Phalanx* has strongly fixed these supernumerary Fingers to the Hand, we may then make use of a small Incisive Forceps, with which we are to cut them clear off at once, as near the Hand as possible, and then dress them as simple Wounds,

Wounds, always more especially taking care that we leave no Deformity.

**Of Trans-
fusion.**

Besides all those above-recited, there is another Operation which we call Transfusion, which has made a great Noise at *Paris* these forty years; and though 'tis a Modern Invention, and from its beginning has been condemn'd, the Chirurgeon ought yet to be acquainted what it is; for which reason, before I conclude the Operations of the Arm, (the Part on which 'tis practis'd) I thought it proper to inform you what it is, not to learn it you in order to practise it, but to give you a just Horrour at the Thoughts of it.

**Its Original
and pre-
tended Ad-
vantages.**

Transfusion consists in finding out ways of passing the Blood or some other Liquor into the Vessels of an Animal. On what *Etmuller* relates of an infinite number of Experiments of different Liquors injected into the Veins of a Dog, Mr. *Denis*, a Physician, which at his own House held Medicinal and Physical Conferences, imagin'd that if he could introduce Blood into the same Veins, and at the same time draw out that contain'd in it, we shou'd renew the whole Mass of Blood, and that by injecting young Blood in the place of old, we shou'd render the Animal young again. Having communicated his Notion to some Lovers of this sort of Conferences, it met with a general Approbation: Experiments were made on several Animals, as well of different as the same Species, and in all Conversations we were entertained with no other Discourse, than that of the wonderful Effects of this Invention. These Gentlemen promised to secure Man by this Means from all sorts of Diseases, to make him live as long as he pleased, and to preserve him in the same State in which he was when they should begin the Practice of this Transfusion on him.

**How per-
formed.**

To prove what they advanced, 'twas necessary to try the Experiment on Men: And accordingly they found some miserable enough to suffer it for a Sum of Mony; they open'd the Artery of a Calf, and by the assistance of a Tube, one end of which was fix'd in the mention'd Artery, and the other in one of the Veins of the Arm, they forc'd the Blood of that Animal into the Veins of the Man; at the other Arm also at the same time they drew out as much as they thought they had caused to enter. They perform'd several of these sorts of Operations, which, according to them, were to have been attended with an extraordinary Success; but the fatal End of these miserable Victims to Novelty, in one day destroy'd the mighty Opinion which they had entertain'd of their Notion; for their Patients became senseless, distracted, and afterwards dy'd. The Parliament, informed of what had pass'd, interpos'd its Authority, and publish'd an Arrest, by which, on rigorous Penalties, the practice of this Operation was forbidden.

**Success of
the Expe-
riment.**

But these false Philosophers did not yet easily yield up their Notion, but being forc'd to submit to the Commands of their Su-
periors

periors in the case of Transfusion of Blood, they confined them- Of the In-
selves to the Infusion of Liquors into the Veins. They made *fusion sub-*
several Trials of various sorts, and gave us a List of the Dis- *stituted in*
eases which they pretended must be cured this way; also affirm- *its stead.*
ing, that by syringing Broth into the Veins after a great *Ha-*
morrhage, they would repair the lost Blood in less time, than
if it passed through the ordinary Channels; they asserted, that
if Man would submit to this Infusion of Liquors, all Diseases
whatever would be sooner and more certainly cured, than by
the Rules of the medicinal Art.

Never was any Arrest more seasonably publish'd than this, to
destroy the Prepossession of these Innovators, and prevent the
course of this Operation, which would have prov'd of pernicious
Consequence, with regard to brotherly Love and Religion,
if they had been suffer'd to perform it from Man to Man,
which was the end they propos'd. But those who invented
this horrible Project are dead, and 'tis it self almost buried in
Oblivion, and though I mention it now, 'tis only in order to
rank it amongst those Operations which ought never to be pra-
ctis'd.

The End of the Eighth Demonstration.





The Ninth
DEMONSTRATION
OF
Chirurgical Operations.

Of those practised on the Lower Extreme
PARTS.

Of **AMPUTATION.**

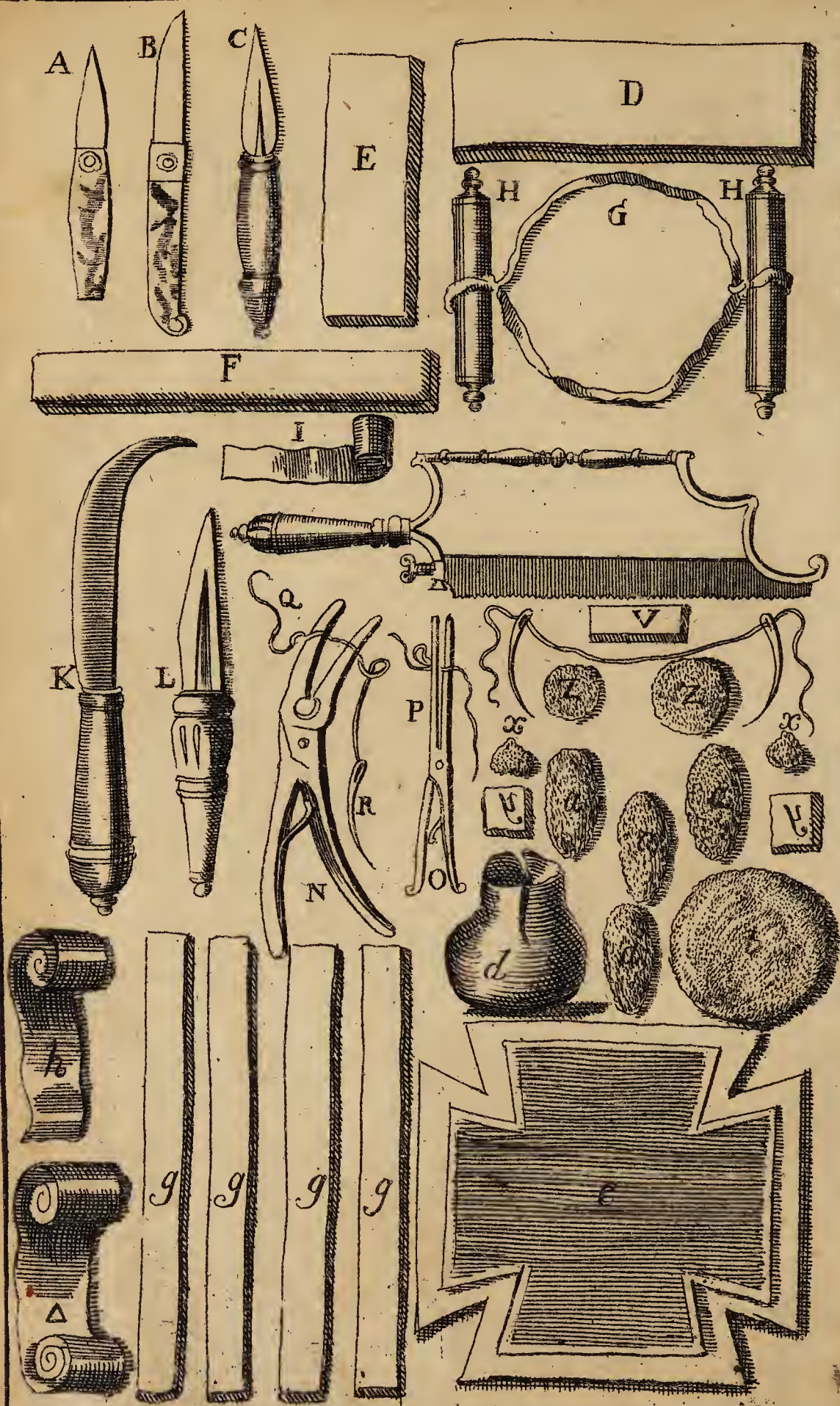
GENTLEMEN,



HERE remains now only for me to demonstrate to you the Operations which are practis'd on the lower Extreme Parts; which are the *Thigh, Leg and Foot*. The Operations which these Parts require are not less necessary, nor do they less deserve your application than all those which I have hitherto been shewing you.

The Terror to be surmounted in this Operation. Of all our Operations, that which strikes the most Horror is the Amputation of a Thigh, a Leg or an Arm. When we are ready to sever a part from its whole, and reflect on the cruel means we are going to make use of, none can help trembling, and sharing a part of the misfortune with the poor Patient, who is reduced to the fatal necessity of being depriv'd of one of the parts of his Body for his whole Life.

This



This Operation is call'd *Acrotiriāsmos*, which is deriv'd from *Its Greek* the Greek Verb *Acrotiriazin*, which signifies *to cut off the ex-* *Etymology.* *treme parts of the Body*, it consisting in the entire Extirpation of the Arms and Legs, which are the extreme parts of our Body. This cannot be performed without putting the Patient to violent and inexpressible Pain. Wherefore the Chirurgeon is to avoid these Operations as much as he can, and never propose them before he has try'd all means which the Art of Chirurgery can inspire him with, in order to prevent them.

The common Opinion is, that Chirurgeons desire nothing *Ill Opinion* more than cutting and hacking. and their Joy is at the highest *conceived* pitch, when with the cutting Instruments in their Hands, they *of Chirur-* have a glut of hacking Work. This mistake is also got in a- *geons.* mongst the great People, and I have heard the King say, speaking of the Assistant Chirurgeons to the Major Chirurgeons of the Army, that they were very eager after these Operations; and that they reckon up their Exploits each Campaign by the number of Legs and Arms which they have cut off. But I assured his Majesty, that it was the Operation which was the most uneasie to the Chirurgeon, and that if he was ever fond of any opportunity of shewing his address, 'twas in those Operations which requir'd Nicety, and not in those which exacted Cruelty, and which ought rather to be perform'd by a Butcher than a Chirurgeon.

When we perform any other Operation, 'tis to preserve the part to which 'tis applied. If, for Instance, 'tis an Eye we are to go to work on, 'tis to amend its Faults, and restore it to its ordinary function; but in this case of Amputation, the end is the destruction of the part, by wholly retrenching it, not only as useless, but pernicious, and lest it shou'd communicate its Putrefaction and ill Qualities to the whole. Thus the pro- *End of this* pos'd design of this Operation is not the preservation of that *Operation.* part on which 'tis employ'd; but that of the whole Body, which would perish without this help. Wherefore the Chirurgeon often finds himself constrained whether he will or no, to separate a Leg to save the Patient's Life, it being better to live with three Members, than dye with four.

When an Arm or a Leg is mortified, and the natural heat *Cases in* is absolutely extinct, we cannot dispence with cutting it off, *which 'tis* since there is no other way left of recalling the Life of the *necessary.* rest, and if it be deferr'd, the Evil will increase. But we are to consider two degrees of Mortification, the first is what we call a *Gangrene*, which is when the part begins to putrefie; and the second a *Sphacelus*, is when 'tis intirely corrupted. There are hopes that a *Gangrene* may be dealt with by the Remedies which I shall immediately lay before you, but the *Sphacole* admits of no other Remedy besides Extirpation.

Cause of.
and diffe-
rence be-
twixt the
Gangrene
and Spha-
cele.

The *Gangrene* and *Sphacela*, which are two different Distempers, and differ only in the degrees of more or less, are owing to the same Cause, which is the interception of the circular Motion of the Blood; for as long as this Motion continues, and by its means the Nutritive and Spirituous Juices are convey'd to the part, it retains its Heat, Vigour and Life. But as soon as the distribution of the Juices comes to cease, or be interrupted by any Cause whatsoever, we no longer find either Heat, Motion or Life: So that 'tis the presence of the Blood and Vital Spirits which keeps the Life in the part, and their absence which destroys, and makes it fall into Mortification.

This distribution of the Blood, to which only the subsistence of the Machine is owing, and which is absolutely necessary to vivify the parts, may be interrupted by an infinite number of Diseases. Large Tumours, an *Erysipelas*, great Inflammations, great Cold, violent Compressions, sudden settlements of malignant Serosities, and the bitings of Venemous Animals, may hinder the Blood gliding into the part; and cause that which is there to return to its source, in order to receive fresh heat in its passage thro' the furnaces of the Heart: So that the part no longer having any Communication with the Principle of Life, *Gangrenes*, and a few Days afterwards becomes wholly *Sphacelous*.

Two other
Causes of
these ills.

I shall not here spend time in explaining to you how these Diseases cause a *Gangrene*. Very able Physicians have taken the Pains to instruct us by new Systems, which they tell us are very easie to comprehend, 'tis only to be wish'd, that 'twere as easie for the Chirurgeon to stop and cure the *Gangrene*, as 'tis for the Doctor to talk on't; but I shall content my self with speaking of two other Causes, which are great Contusions and large Wounds, because they frequently force the Chirurgeon to come to Amputation.

A Contusion is a Solution of the continuity of the Fleshy Parts, without wounding the Skin: It happens by a Fall, or some violent Blow given, which occasions a dilaceration of the Carneous Fibres, and Capillary Vessels, which convey the Blood into the spaces of the Flesh: If some Vein happen to be a little considerably torn and open'd under the Skin, it causes an effusion of Blood, which inundating the part, occasions a great Tumour, and very hard Tension; which excessively swelling, it hinders the access of the Vital Spirits thither, which may be follow'd by a *Gangrene*.

Remedy.

To avoid the ill consequences of a Contusion, we are to bleed the Patient several times, obliging him withal to take a little Glass of Vulnerary Water, into which we are to put half a Spoonful of *Fiorovanti's* Balsam, or else dissolve two Drams of Confection of Hyacinth or Alkermes in an ounce of Brandy, and cause the Patient to swallow it immediately: We are
to

to order to be boil'd in Wine the Aromatic Herbs, as Sage, Rosemary, Hyfop, Fennel and Marjoram, in which Decoction we are to dip the Bolsters which we are to lay hot on the part, frequently renewing them.

If the extravasated Blood does not begin to transpire, and resolve by these Remedies; but the part is swoln, stupid and heavy, and there appears an alteration in the Colour, we are to make light Scarifications with the Lancet A, and suffer the Blood to run out to discharge it; and also to excite it to issue out, we are to wash the part with warm Sea Water, and lay on it a Cataplasme made of resolvent Meals boil'd in Hydromel, to which we are to add Turpentine, Rose-Powder, Brandy, and a little Theriaca.

Scarifica-
tions and
Lotions.

On the next day, if we find the part still swoln, and not to vivifie sufficiently, we are to make Incisions with the Incision Knife B, which must be larger and deeper than the Scarifications of the precedent Day: If the Patient feels Pain at the making of them, and there issues out Blood, 'tis a sign that there is yet a remainder of Life in the part, which is to be rous'd by washing it with Camphorated Brandy, in which is dissolv'd *Ægyptiacum*, and lay on the above-mention'd Cataplasms.

If in the Evening, instead of seeing the Swelling abated, we find an *Oedematous* or *Pituitous* Tumour accompanied with *Phlyctena*, with little Pain, we are with the Penknife C to make such deep Incisions as oblige the Patient to cry out, and wash them with Spirit of Wine, or yellow Water made with Lime Water, and sublimite and redouble the Cordials and Sudorifics, which we may order him to drink in Wine, as the best of all Cordials. In short, if at our entrance into the Chamber we smell a sort of sweetish Savour, and in dressing the Patient there arises a sort of Cadaverous Vapour, and the part is livid and insensible, 'tis a sign that the Mortification is confirm'd, and there being no more hopes of saving that Arm or Leg, we are to advertise the Patient of the Danger in which he is, and to determine on the Extirpation, no means of avoiding it being left.

Last degree
of this Dis-
ease.

The Army-Hospitals during a Siege, or after a Battel, furnish numerous occasions of performing this Operation: The Cannon and Musket-Shot, the bursting of Bombs and Grana- does so bruise the Arms and Legs of those who they Wound, that 'tis very difficult to save them, and if we see so many Soldiers return with an Arm or a Leg less, we have not cut it off for our Diversion, but the danger of their Wounds requir'd it. I can give certain evidence, that in the last Campaign, in which Mr. *Bessieres*, Mr. *Hanstone* and my self were consulting Chirurgeons to the King's Army under the Command of the Duke of *Burgundy*, there was no Amputation made without consulting those Gentlemen and my self.

The most
frequent
Occasions
of Ampu-
tation.

Practice in
case of
Members
taken off by
Fire-arms.

A Cannon Bullet carries off a Leg or an Arm; in which case no Deliberation is to be made on the Operation, since 'tis already done; but the Chirurgeon has yet two things to do; the first is, to saw off the end of the Bone, which is never broken so exactly, as not to leave some Fragments or Points to be cut off, that it may not come out beyond the Flesh; the second, is, to prevent or stop the Hæmorrhage, by binding the Vessels, or applying Vitriol Buttons, or other Styptics, of which I shall speak hereafter. For though the Blood is generally stopped by the Fire of the Bullet, the Scar coming to fall off some Days after, the Blood will issue out in abundance, and the wounded Patient may die, if the Chirurgeon is not upon his Guard. When the Part is not wholly disengaged, and it hangs by some Fragments of Flesh, he is, with his Incision Knife or Scissars, to cut off and dress the Patient, as if he fear'd a Hæmorrhage.

And for
those shot-
ter'd.

If by a Musquet-Ball the Bones of the Arm or Leg are broken, and there are several Splinters, as though we had broken a Wall-Nut, we can scarce avoid Amputation; or if the Ball is entred in a Hand or Foot, and has made great Ravage, 'tis also difficult to preserve those Parts. The Chirurgeons were desirous to save the Foot of an Officer of the *Gendarmes*, which received a Musquet-shot at the Battel of *Spire*; but they were forced to cut off his Leg a few Days afterwards, and next that the Thigh, by reason of the *Gangrene* which followed a very little after, of which he dy'd.

Other Causes which
force us to
Extirpation.

I find also another Disease, which sometimes obliges us to come to Amputation, and that is the *Caries*, or *Corruption of the Bones*, which in despite of Remedies evacuates them, as though they were eaten by Worms. Ten Years since we were forced to cut off the Leg of one of the young Men of the Castle of *Versailles*, by reason of an old *Caries* which could never be stopped, and which consumed his Bones, as though they had been all Worm-eaten: Of this he was well cured, and is at present in good Health. When an acriminous and corrosive Serosity, like *Aqua fortis*, gets betwixt the Bones of the *Corpus* or *Tarsus*, it does not quit them, 'till it has made them fall to pieces. A *Serephulous* or virulent Humour also mixes it self with the other, and they working jointly on the Bones, put them in such disorder, that after having dressed them several whole Years, we find our selves at last forced to come to the last Remedy, which is Extirpation.

Necessity of
Consulta-
tion.

To conclude, if by one of these Causes which I have just been reciting, a Chirurgeon is obliged to have Recourse to the last Remedy, he is not to undertake it before he is back'd with the Advice of some of his Brethren, that he may not render himself alone responsible for the Consequences of it, but prevent the Reproaches of the Patient, who finding himself for the rest of his Life deprived of an Arm or a Leg, may conjecture

cture, and report that the Chirurgeon cut it off without any absolute Necessity: Wherefore he is to procure a Consultation, and call in such Physicians and Chirurgeons as the Patient shall desire.

The Operation resolved on, before the Chirurgeon applies to Place the Performance of it, he must first resolve on the Place where *where to* the Limb is to be taken off: Hitherto it has obtained as a *ge- cut off.* neral Rule, that if the Part be a Thigh, 'tis to be cut off as near the Knee as possible; if a Leg, always at the gartering Place, though no other Part than the Foot shou'd be hurt, to the end that we may not leave a long Stump to disturb and incommode the Patient during the rest of his Life; and if 'tis an Arm, 'tis to be cut off as low as we can, that leaving the Patient a long Stump, he may make use of it, and the Deformity may not be so great as in a small one: These are the Rules of Practice which have not been contested hitherto.

All Chirurgeons agree on the manner of cutting off the *Choice of* Thigh and the Arm, but differ on that of the Leg. Amongst *two Me-* those which decry the *French* Method of cutting off the Leg *thods.* near the Knee, *Solingen*, a Famous *Dutch* Practitioner, asserts, that we ought to preserve the whole Leg, and cut off only the Foot above the Ankle, and supply it with an artificial Foot of his Invention, which he causes to be fastened with two narrow, thin, polished Steel Plates, which he makes to shut on the sides of the Leg, where he causes them to be screw'd fast: He tells us, that this Machine once well fix'd, is so firm and steady, that the Patient may walk on it with the same Facility as on that which he brought into the World with him. For my own part, I am of the same Opinion with these last Gentlemen, and advise the cutting off a Leg as low as possible, provided we find our selves able to preserve the Motion of the Knee; for if it must stand always bent, it ought to be cut off at the gartering Place, to avoid the leaving of a longer Stump than is necessary to rest it on a wooden Leg: But by preserving the Motion of the Knee, and adding only an artificial Foot, we avoid the great Deformity of a wooden Leg, and the Patient walks more safely and easily.

Some Authors propose the cutting off the Leg in the very *Amputa-* Joint of the Knee, alledging that the Operation is sooner per- *tion at the* formed, less time being requisite in this case, than must be *Knee con-* employed in sawing a Bone. But this way is not approved by *demmed.* the Practitioners of our Times, who demonstrate its Inconveniencies: They alledge, that if the Part is tumefied, we can hardly find the Articulation, that we are obliged to leave the Knee-Pan, which afterwards proves troublesome, that the two Heads or Protuberances of the Thigh being uncovered, it follows that they must exfoliate or crumble, that by reason of the want of Flesh in the Knee, they will not easily be cover'd

again; and that, lastly, we cannot fix on a wooden Leg without great Difficulty, and Inconvenience to the Patient.

Inconvenience of Fabricius's Practice.

Fabricius would not have us cut off a Leg in the sound part of it, two Fingers breadth above that which is gangren'd, but would have it done two Fingers breadth below the place where the Gangrene terminates, that is in the mortified Part; that by the Application of several actual or red hot Cauteries we may correct the Mortification, which will afterwards fall off in a Scar, and that this Means we avoid both the Pain and the Hemorrhage. But all this dead and burnt Flesh being separated, leaves the ends of the two Bones denudated, which are to be saw'd a second time; and it not being possible for us to be secure against a farther Progress of the Gangrene, because we leave a part which may, before our Eyes, make farther Advances; there are no Chirurgeons which dare venture the advising this Practice.

Three ways of stopping the Blood.

'Tis not enough, that before we proceed to Operation we are determined with regard to the Place where the Leg is to be cut; but we must also, before we go to work, resolve on the manner of stopping the Blood; for the taking off a Limb is not the most difficult Task, a Butcher might have done that; but 'tis not easie for the Operator to master the Blood, by stopping it with Expedition and Safety: 'Tis in this case that the Chirurgeon is to give Proofs of his Ability, as well in his choice of the best way, as in his dextrous Execution of it. Chirurgery furnishes us with three ways of stopping the Blood; first, by Fire; secondly, by the Vitriol Button; and thirdly, by Ligature.

Practice of the Ancients.

Fire was so much in use amongst the Ancients, that they employ'd it in almost all their Operations, as we see Farriers do in all those which they apply to Horses. They heated red hot their actual Cauteries, of which some were shaped like a Button, others like an Olive, and a third sort like a Platin; they apply'd them red hot to the Orifices of the Vessels as soon as the Member was separated; and by thus burning the Vessel and adjoining Flesh, they form'd a Scar which hindered the issuing out of the Blood; but this cruel way was uncertain, because when the Scar came to fall, the Blood flew out with the same Violence as on the Day of the Operation; which has put the Artists of our Profession on the search of gentler Ways than that of Fire.

Application of the Vitriol Buttons.

They have therefore invented the Vitriol Button, which is made of a little bit of broken Vitriol wrapt up in a little Cotton. We prepare three or four of these, which we lay on the Orifices of the Vessels which are cut, one after another: This Vitriol dissolving by the Humidity of the Blood, burns and cauterises where-ever it touches, and by the Scar which it makes stops the Blood: This is the Method used at the *Hotel-Dieu* at *Paris* in all Amputations. But this Scar shares the same Fate

with

with that produced by Fire, for coming to fall off, the Blood may escape out; wherefore we retard its Fall as long as we can, and the Chirurgeons which make use of this way ought to have these Buttons ready every time they dress the Patient, in order to apply them whenever the Blood issues out.

There being no absolute Certainty in either of these two first ways, the modern Chirurgeons have invented the Ligature of the Vessels, and tried Experiments which have succeeded; so that with a threaded Needle they stop the Blood more certainly than with Fire or Vitriol, which cannot produce Scars without putting the Sufferer to extream Pain, from which they at present save the poor Patients, which without that endure enough. This Ligature is made two ways; the first, by pinching the end of the Artery with a Crow's Bill, or a pair of Nippers, with a Ring to close them, which we call a *Vallet à Patin*; They slip on the Instrument as far as to the Artery, a Thread prepared and noos'd, and fasten it with a double Knot; and that it may not be shov'd off the end of the Artery by the continual Pulsations of the arterial Blood, there is to be at one of the ends of the Thread a threaded Needle, which they run through a-cross the Body of the Vessel, after which they secure the Ligature by tying some Knots. The second sort of Ligature consists of two strait Needles threaded with the same Thread which is well wax'd: One of these they run through above, and close to the Artery, and the other below and close to that Vessel; then to make them come out at the Knee-Pan, two Fingers breadth above the Incision which has been made, and a half Finger's breadth distant from each other: They tie the two ends of the Thread one near the other on a small Bolster, in such manner that the Vessels are clos'd by the Noose made by the Thread, and the Blood certainly stop'd; we are withal to take care the Noose of the Thread don't take hold of the Nerve which is cut, which by being so tightly drawn together, would occasion convulsive Motions, and a Palpitation of the Heart which would very sensibly afflict the Patient.

*Of the Li-
gature of
the Vessels
at present
used.*

*Manner of
doing it.*

By the Description I have just been giving of these three ways of stopping the Blood, I doubt not in the least but that you will decide in favour of the last, as the least painful and most secure: 'Tis indeed that which I make use of in Amputation, which I am now going to demonstrate, examining in this and all other Cases what is to be done before, during, and after the Operation.

Before the Operation we are to prepare the Apparatus, which consists of whatever is necessary to its Performance, which we ought to have perfectly ready laid on a Basin, that we may have nothing to ask for, and may take every thing as we want it. The Preparatives are numerous, for we are to double the number of Pledgets, Astringents and Bolsters, that nothing may

*Disposition
of the Ap-
paratus.*

may be wanting; and all this requiring time, 'tis to be done out of the Patient's Presence, that he may not be terrified at the sight of so much Lint, and so many Bolsters and Bands.

In what it consists.

This *Apparatus* comprehends three things; First of all, the Instruments to cut off the Leg; secondly, whatsoever is necessary to stop the Blood; thirdly, whatever is requisite to dress the Patient. For the first, there must be two Bolsters to lay under the Ligatures, *viz.* a long and a circular one, a double Wrench to close it the better, a very strong Ligature to fix a Finger's breadth above the place where we intend to make the Incision, a great crooked Knife, which is not to have any Edge on its back, that the Chirurgeon may press upon it with his Left-hand to expediate the Incision, a large Penknife to cut off the Flesh betwixt the two Bones and the *Periosteum*, in case that the crooked Knife has not done it, a good Saw well fil'd or sharpen'd, and a little greas'd, that it may make quick Dispatch in sawing the Bone. Secondly, to stop the Blood, there must be a Crane's-Bill Pincers, on which is fixed a noos'd Thread, another pair of Nippers, with a Ring to close it, when it holds the end of the Artery, Needles, wax'd Thread, small Bolsters, Astringents composed of *Bole Armoniac*, *Terra Sigillata*, *Sanguis Draconis*, &c. powder'd and incorporated with the Whites of Eggs, with which Preparation we are to cover the Pledgets, as also with three or four Buttons of Vitriol in case of Necessity. Thirdly, to dress the Patient, we must have three small square Bolsters to lay on the ends of the Vessels, two Pledgets dipt in Spirit of Wine to lay on the Bones which are cut, a numerous quantity of Pledgets charged with Astringents, with which we are to cover the whole Wound, a Stopple made of two about the size of the bottom of a Plate, to take in the whole Stump, and cover'd with Astringents; a Bladder, at the bottom of which are Astringent Powders, and which is cleft to clap the Stump into it, a large Plaister and Bolster cut like a *Maltese Cross*, four long Bolsters of half an Ell long, and two Fingers breadth broad, a Band roll'd up at one end, another of four or five Ells long, of the breadth of four Fingers, and roll'd up at both ends, in order to make the Bandage which we call the *Cap of Maintenance*, and several Napkins for necessary Occasions.

Composition of Astringents.

Situation of the Patient.

We are to cause the Patient to be seated on the edge or end of the Bed, held up by a Servant, who kneels behind him, and on whose Stomach he leans; we cause a Servant to sit also on that side of the Patient on which we are to perform the Operation, who grasping with his two Hands the lower part of the Thigh, draws the Skin upwards as much as possibly he can, whilst the Operator is fixing on the Ligatures: We wrap the Leg round with the Napkin D, as it were as far as the Place where we are going to make the Incision, and cause it to be held

held by a third Servant placed directly opposite to the Patient, kneeling on one Knee, and holding it up a convenient height: A fourth Servant is charged with Instruments, and placed next the Operator, and the Apparatus for the dressing is held by another Servant: Nor can we be without a sixth, who is to obey the Orders of the Operator; so that a great many Servants are necessary on these Occasions.

The Operator is to encourage the Patient, and having given him half a Glass of Wine, to enable him the better to endure his Pain, he is to place himself betwixt his Legs, because having the two Bones to saw at the same time, this Situation is the most convenient, whether he is to cut off the right or left Leg: If he was placed on the outside, he must saw the *Ostium* the first, and afterwards the *Perona*, which being very weak, might break or splinter, rather than stand sawing: Besides, sawing the two Bones one after another, would render the Operation longer, and the Patient's Sufferings consequently more tedious. All things thus disposed, let's now see how the Operation is to be managed.

We begin with the Bolster E, which is about half a Foot long, narrow and thick, which we lay on the Knee-pan, and suffer it to descend as low as the place where we are to make the second Ligature: We lay another circular Bolster F, three Fingers breadth above the Knee, which passes over the upper part of the long one, in order to compress the Vessels. On this last Bolster we fix the Ligature G, which is to compose the Wrench, and through this Ligature we thrust the small Sticks H H, one on the inside, and the other on the outside of the Thigh, and turn them 'till we find the Thigh sufficiently strain'd, and then give these two Sticks to be held by the Servant which before draw'd up the Skin of the Thigh. We there take a second Ligature I, which we fix three Fingers breadth below the Knee, in order to contain the Skin and the Muscles in the time of Incision; we take up the ends of this Ligature, after having roll'd it two or three times and tied it, sticking them in below the under part of the long Bolster, by reason that if we left them to hang down, they might do hurt in the time of the Incision. We then immediately take with our Right-hand the crooked Knife K, which we thrust under the Leg; and fixing it on the *Crista* of the *Tibia*, press on its Back with our Left-hand, then descending under the Leg, and remounting by the inside 'till it comes to the place where we began, which makes a circular Incision, we cut all the Flesh to the Bones: We then quit the Knife, and take the Penknife L, with which we cut the Flesh betwixt the two Bones, and repass the said Penknife around the *Tibia*, to cut the *Periosteum*, if not already cut, because if the Teeth of the Saw shou'd be forced to tear the *Periosteum*, and the Flesh which occupies the

the Space betwixt the two Bones, 'twou'd augment the Patient's Pain.

A singular Practice. Some Practitioners will have us take a bit of Linnen, tear it at one end, so that 'tis in three ends; that the two slit ends may pass betwixt the Lips of the Wound, whilst that which is not remains below, and that whilst we are sawing the Bones, we cause a Servant to draw up these three ends of the Band; they pretend that by this we gain two Advantages; one is, that by repulsing the Flesh we draw the Saw higher, which prevents the ends of them coming out beyond the Flesh after the Operation; and the other is, that this Linnen preventing the Saw touching the Flesh, the Patient is thereby spar'd the enduring a great deal of Pain, and the rather, say they, because the Operation is not hereby retarded one minute.

Manner of Sawing. With the Saw M we do our utmost to saw the Bones with all possible Expedition, having once fix'd it on, and the Left-hand laid on the Leg, we draw the Saw gently 'till we find it has dented in; when we find it has entred the Bone we go faster, and very fast when we find it in the Body of the Bone. If he who holds the Leg should raise it higher at that time, he would stop the Saw, and hinder its going, for which reason he is to be directed to lower it, to facilitate the passage of that Instrument, that it may freely pass and repass without any interruption.

What to be done after the Operation. The Leg being separated, we immediately take off the Ligature below the Knee, and taking the Crows-bill Pincers N, or those mark'd O, which are provided with a Ring to shut them when they hold the Vessel; on each of these Pincers there is a noosed Thread Q Q, ready to bind up the Vessel, and at the end of these Threads a Needle R R. We order the Servant which holds the Wrench to slacken it a little, in order to discover by the streaming of the Blood the Situation of the Vessels, avoiding the placing our selves directly opposite to the Stump, unless we would have the Blood fly into our Face, but keeping a little on one side: Having got hold of the Vessels with the Pincers, we intrust that Instrument in the Hands of a Servant to be held, whilst we fix the Ligature as is above hinted. If we cannot get hold of the Vessel, then with the two Needles S S, threaded with the same Thread T, run along by its sides, and drawn out under the Knee-pan, we secure it by tying the two ends of the Thread on a Bolster V, as I have already told you: Or we may by a third Method master the Vessel, which is by taking a course crooked Needle, which we are to thread, and run it into the Vessel at one side and draw it out on the other, taking into the stitch a little of the Flesh, and tying the two ends of the Thread on a Bolster, by which means we soon stop the Blood, as I have my self, and seen others several times do the same in the Army-Hospitals. The Ligature being thus made, we a second time order the loosening of the Wrench; and

and if the Blood ceases to issue out, we for that time content our selves with the Operation: But if the Ligature happens to fail, we have recourse to the three Vitrioline Buttons XXX.

'Tis needless to prescribe the allowing the Evacuation of a *The arterial Blood* a certain quantity of Blood to disgorge the Part; for notwithstanding the utmost Care of the Operator to stop the Flux, *to be immediately stopped.* there will issue out always too much of that Liquor: All that which was in the Leg is lost, and almost all the Veins of the Thigh empty themselves, as well during the Operation, as after 'tis finished, without its being in our power to hinder it; wherefore that quantity is sufficient, without our voluntary suffering any more to run out, which can be only the arterial Blood, the loss of which would rather enfeeble than relieve the Patient: Wherefore we are, as soon as we possibly can, to stop it by Ligature, and preserve the strength and vigour of the Patient.

After the Operation the Patient is to be dress'd, which we *Dressing of the Patient.* are to perform with great diligence; all things being ready to that end, we direct the Servant which holds the Wrench to keep it tight during the Dressing, that the impulse of the Blood don't extend beyond the Ligature, which is not able to resist it, unless sustain'd by the whole *Apparatus*; and thus we begin the Dressing, with applying two little square Bolsters Y Y, in order to sustain it against the Pulsations of the arterial Blood. We lay on the two ends of the Bones two little flat Pledgets moistned in Spirit of Wine, and cover all the Flesh with the thick Pledgets *aaaa*, charg'd with Astringents, laying over them the tow Stopple *b*, which covers the Stump, which we are to force into the Bladder *d*, slit on purpose for that end, and furnished with astringent Powders: We then lay on the Plaister *e*, cut or slit at the four Corners, fixing its middle part on the Stump, and causing its four Ends to come over the whole Knee, next to which is to follow the large Bolster *f*, shap'd in the same manner, and then the four long Bolsters *gggg*, the middle Parts of the three first of which are laid on the end of the Stump, representing the Figure of a Star, and the fourth is to be more than once circularly roll'd about the Stump, and withal take in and fasten the six ends of the three first.

Before we fix the Bandages we bend the Knee a little, in *Fixing of the Bandages.* order to reduce the Stump to a Posture proper to rest it self on a wooden Leg; we then take the Band *b* roll'd at one end only, which we circularly roll about the Stump; when having past the Knee, we roll it once over the Stump, then reascending and thus ascending alternatively, we continue 'till the whole Band is rolled up, when we fasten the end with a Pin. We next take the Band rolled at both ends Δ , and in each Hand holding one end, we apply the middle to the Stump, and rolling the two ends upwards, we leave one of them to make several circular turns, causing it to be held by a Servant whilst we carry.

**Circular
Bandages.**

carry the other over the Stump, and return on the Knee, in order to be engaged by a fresh circular roller, and soon after again cross over the Stump, and proceed in the same course 'till we come to the end of the Band; and because this sort of Bandage is one of those applied to the Head, it is called a Capeline, from *Caput*, a Head, we then take off the Wrench or Winch; but the end of the Band which has been circularly rolled about the Knee, being not so soon rolled up as that which is wound around the remaining Stump, we roll it circularly about the lower part of the Thigh, after having laid under it a very thick Bolster, which resting on the Vessels, somewhat slackens the impetuous course of the Blood towards the Ligature.

**How to lay
the Patient
in his Bed.**

The Bands being well fasten'd with Pins, we put the Patient to Bed, placing under his Knee-pan one or two Pillows to keep up the Stump in a raised posture, and cause it to be held up by a Servant with one Hand, whilst with the other he holds fast the Knee, for several Days, in order, by this pressure, to hinder the issuing out of the Blood, and the loosning of the Bands, as also to give notice to the Chirurgeon if the Blood happens to escape out and run through the Ligatures. We are to order the Patient Broth, to bleed him two or three hours after, and confine him to a strict Diet.

**Taking off
the Dress-
ing.**

We are not to take off this Dressing in two or three Days, but rather stay longer if we fear an *Hæmorrhage* at the Dressing; we gently take off the Pledgets, because the Thread of the Ligature may happen to stick to it: We may then dispencc with the use of the Bladder, it being no longer necessary to cover the Pledgets with Astringents, but in their stead we are to substitute other coverings, consisting of some digestive Remedy, in order to bring the Wound to Suppuration. If the Part is gangren'd, we are to encourage the Digestive, and by the use of spirituous Remedies vivifie or quicken the Wound, and clear away the Corruption; we then continue Dressing it with Mundicatives, Incarnatives and Desiccatives; we then lay no Ointment on the ends of the Bones, but only Pledgets moisten'd in Spirit of Wine, in expectation of their crumbling off, or Exfoliation. And when that is over, we endeavour to cicatrise the Wound, which is not easily done, because being round the Scar must of necessity grow from the Circumference to the middle Point or Center.

**Continu-
ance of the
Dressing.****The Pains
which the
Patient
feels in the
lost Mem-
ber.**

Almost all the Patients who have had an Arm or a Leg cut off, complain of feeling a pain in the Part which they have lost; sometimes they tell us 'tis their great, and at other times their little Toe, which prevents their Sleeping; and I have met with some Patients who have told me, that those sorts of Pains were more insupportable than those of the Wounds.

Some Chirurgeons blame the use of the Hog's Bladder, alledging that it hinders the discovering when the Blood escapes
out

out of the Vessels, because it retains it all: Others assert, that we ought to use it for that very reason, because this extravasated and detained Blood mixing with the astringent Powders, forms a sort of Cement which stops the Vessels, and prevents the *Hæmorrhage*.

Some Authors will have us, after the Amputation, to run a Needle and Thread through the Skin of the upper Part of the Stump, and then likewise do the same to the under Part, in order to tie the two ends of the Thread together; that we do the same also from the Right to the Left side, so that these Threads crossing each other over the Wound, may draw the Skin nearer together, and prevent the Flesh remaining too much uncovered and exposed. But this Practice is not approved by all Chirurgeons, because that when the Operation is well performed, the Skin, the Flesh, and Bones are all equally Cut, so that 'tis putting the Patient to fresh Pain by these four Stitches of the Needle; and, say they, if the Skin leaves the Flesh too naked, a proper Bandage may remedy that Inconvenience.

One of our Predecessors imagined he had met with a wonderful Discovery, when he proposed to us the performing the Amputation with a great Knife heated red hot: He tells us, that by this method we kill two Birds with one Stone, that is, that we make the Incision, and cauterise the Vessels at the same time; but no Practitioner has yet approved or follow'd his Method.

Botal describes another way of cutting off a Leg; he will have us fix it betwixt two Butchers Chopping-Knives, fasten'd and set in two wooden Blocks; on the edge of the undermost we are to lay the Leg, which done, he will have us let the other slide along a Groove and fall on it, affirming that these two Chopping-Knives separate the Flesh and the Bones quicker than the Saw: He adds, that several Legs have been thus cut off, and the Patients well cured without suffering in the Operation any more than a light pain.

I don't introduce these various Opinions here, to excite you to reduce them to practice, but only to inform you of the different Sects which from time to time start up in Chirurgery as in all other Professions: I shall now draw towards a Conclusion of this Article, which I shall end with a recital of an Experiment try'd on the Amputation of a Thigh in the *Invalides* twenty Years since.

One *Rabel*, whom I have already mentioned, propos'd to the King and Monsieur *Louvois* a styptick Water, which he pretended to be of wonderful and infallible efficacy for the stopping all sorts of *Hæmorrhages*, and that no wounded Man in his Majesty's Armies need dye of the loss of Blood, if this Water was apply'd. He desired leave to try some Experiments, to convince the whole World of the Excellence of his Remedy, and

Rabel's Experiment.

and so persecuted Monsieur *de Louvoy*, that he obtained his consent to make a trial on a Soldier in the *Invalides*, whose Thigh was to be cut off. Monsieur *du Chesne*, first Physician to the Princes, was present, with several other Physicians and Chirurgeons, at the Amputation, which was performed by the Chirurgeon of that Hospital. The Patient was delivered to *Rabel*, who had prepared his *Apparatus* his own way; he applied his Remedy in the manner he had proposed, and made use of such Bandages he thought necessary to stop the Blood; but he had scarce done before the Blood visibly pierc'd through all the Band. He was obliged to take off this *Apparatus*, in order to clap on another Dressing; he doubled the Dose of the Water, and did his best to stop up the Part, but the Blood continually running out, the Patient died under his Hands, and in the presence of all who were there. A Report was made to the King and Monsieur *Louvoy* of what had happen'd, and *Rabel* was forbidden any more making use of his Water on severe Penalties.

When the Chirurgeon has been forced to cut off a Leg or an Arm to save the Life of a wounded Patient, though he be perfectly cured, he is yet unable to go, by the loss of the Part which was necessary to the performance of that Function: 'Tis not then enough for a Chirurgeon, to have drawn him out of the Grave, he must by his Industry add an Organ in composition and use like the former.

Of the Prostheses. This Operation is rank'd under the fourth and last Species of Chirurgical Operations, which we call *Prosthesis*, or *Protassis*, from *Pros*, before, and *titein*, to put, hinting that by means of this Operation we fix and add to the Body an Instrument in the place of some Part which it has lost: We draw two Advantages from this Addition, the first is Ornamental, as when we fix in an artificial Eye or Tooth; the second, is for Necessity, as when we add a wooden Arm or Leg; and 'tis particularly this last Species of *Prosthesis* which is necessary, since without its help the Man can't act.

Every one knows how a wooden Leg ought to be made in order to go with it; the last War have reduced several Persons to a necessity of wearing it: I shall only hint to you, that it ought to be proportion'd to the size of the other Leg, that its upper part is to be hollow, to comprehend the lower part of the Thigh; that it must have Ribbans or Tapes to tye and fasten it to the Thigh; that it must be provided with a small Cushion at the place where the Knee lies, that the Part may not be hurt by the hardness of the Wood, which is not to be brittle, but firm and strong for the security of the Wearer.

The wooden Leg and its use. When we would adjust its Shape, we are to cause one to be cut by a Carver, of the same Figure with the other, observing the Dimensions exactly; on this we put a Shoe and Stocken as on the other, and if it reaches up to the Thigh, the Knee being

ing cut, we may make it bend when we sit, by taking away one Ring or Ferrel, and putting it in again when we would go. An Officer of the Army was so habituated to his wooden Leg, that he mounted on Horseback, and exposed himself to all the utmost Dangers which offer'd : He received a Musquet-shot in it, which broke it, and cried out to the Enemy that he was horridly disappointed, for he had another in his *Port-mantua*.

About a Year since the Reverend Father *Sebastian*, a Carmelite-Friar, and one of the Honorary Academicians of the Academy of Sciences, presented an artificial Arm made of Tin, and fill'd with several Springs, by means of which he promised, that being fasten'd to the Stump, the Patient might lead a Horse, Write, and perform the same Functions as with the natural Hand: He assures us, that the sole Motion of the Stump set the Springs at work, and would make the Patient move the Fist and Fingers as he pleased. This Machine was not perfected when 'twas presented to the Academy: If it answers his Promises, the maim'd Persons cannot pay him a sufficient Tribute of Praises.

Of an artificial Arm.

Ec

FIGURE

FIGURE XLVIII. For the OPERATION
for the VARIX.

Of the Operation for the Varix. **B**Y the word *Varix* we understand a *Dilatation of the Veins* which requires an Operation to Cure it; which we call *Kirfotomie*, which is derived from *Kirfo*, which signifies a *Varix*, and *temmein*, to cut; and is the making of an Orifice in the *Varices*, or *dilated and swell'n Veins*.

Two Causes of this Indisposition. Our Authors assign two Causes of the *Varix*; the one Internal, when the Blood becomes too gross, by the acquisition of a too dense consistence, and consequently cannot glide in the Veins, but stopping in some of their Branches coagulates, and thereby hinders the Passage of that which follows it, which continually pressing in order to force its way, dilates the Vein. The

The other an External Cause, is, that when by some Strain or violent Effort the Blood has extended the Membranes of a Vein, and forced them to form a small Purse which allows them space and liberty. If these Indispositions happen'd as frequently to Men as Women, and 'twas not observable that we only find them on the Thighs and Legs of those who have had Children, we should admit these two Causes. But the *Varices* being the Effects of Pregnancy, we are not to hunt after any other Causes, besides the Tumour produced by the *Matrix* when it contains a Child, whose ponderous pressure on the *Iliac* Veins hinders the Blood which reascends from the lower Parts entering the *Vena Cava*.

The Veins of the Thighs and Legs much more abound with *Valves* than those of other Parts; they are so many Steps which serve to help the ascension of the Blood, and facilitate its return to its Source. When the course of the Blood is stopped by the tension of the *Matrix*, it lies heavy on these *Valvules*, dilates them, and produces small Tumours of a Violet Colour, which we see rise from place to place, along the lower Extremities which we call the *Varix*, or *Varices*. Numerous Valvules of the Veins of the Thighs.

They are known by their Colour, which is a brown Violet, and by thrusting a Finger on the Tumour: When 'tis produced from Blood, it disappears because 'tis driven along the Vessel, but returns as soon as our Finger is taken off. They are always more swell'd in the Evening than the Morning, because the Blood, when we are up, finds more difficulty to reascend in a direct Line than when we are laid down; that Posture being the most easie one for that Liquid to continue its Course. If then any Patient, by a too wide Dilatation of the Blood, begins to be in Pain, or the Vessel bursts by an extream Tension, we are to undertake the Cure. Signs of the Varix.

Chirurgery presents us with three ways of remedying this Inconvenience. The first is, by the Application of such Astringents as are sufficient to contract the too much extended Membranes of the Vein; of this sort are the finest Meal, Bean Flower, the Powders of *Bole-Armoniac*, of *Sanguis Draconis*, and *Terra Sigillata* incorporated with the White of an Egg, and spread on the bit of Linnen A, which is to roll around the Leg, and be left there long without removal; or else the *Emplastrum ad Hernia*, or Rupture-Plaister, which is a strong Astringent. Three ways of Curing it.

The Second is by Bandage, which is two ways performed; either with the Roller or rolling Band B, about three Fingers breadth, and three Ells long, which we begin at the Foot by a Stirrup, and continue by swathing up to the Knee, having laid on a large Bolster C, moisten'd in some styptic Water D, on the rising Swellings of the Veins, in order to press the heavier on those Places than any others: The other way is the making a sort of fine Boot, or strait Stocking E, either of course Linnen or Dog's-Skin, which reaches from the Ankle to the Two Methods of the second.

Knee, is cut in proportion to the Shape of the Leg, and provided with Oilet-holes F, to Lace it on the out-side of the Leg with the Lace G: This Bandage being tight laced, is worn under the Stockings in the Day-time, and left on in the Night without incommoding the Leg. I prefer this last way to the former, because its Compression is equal, it cannot loosen or slip, and that we are not obliged to take it off, and put it on oftner than we please; and as for the former, tho' never so well fasten'd, the Circumvolutions continually slip up and down at the putting on, or pulling off the Shoes, which obliges us frequently to roll them a-fresh. The third way is by Incision, which consists in the making of an Orifice on the *Varix* to evacuate it, which is also performed two ways.

First way
of practi-
sing the
third Me-
thod.

The first of which is that of opening the *Varix* with the Bleeding Lancet H, making the Orifice longways in the Vein, somewhat larger than that in Bleeding, in order to evacuate all the Blood contained in the Tumour; and if any of it be clot- ted to get it out, and lay Astringents on the part, or the small Leaden Plate I, to bind it up well, and leave it a long time un- touch'd, that is for some Months, if the Patient is no longer incommoded with it.

Second
way not
much
in use at
present.

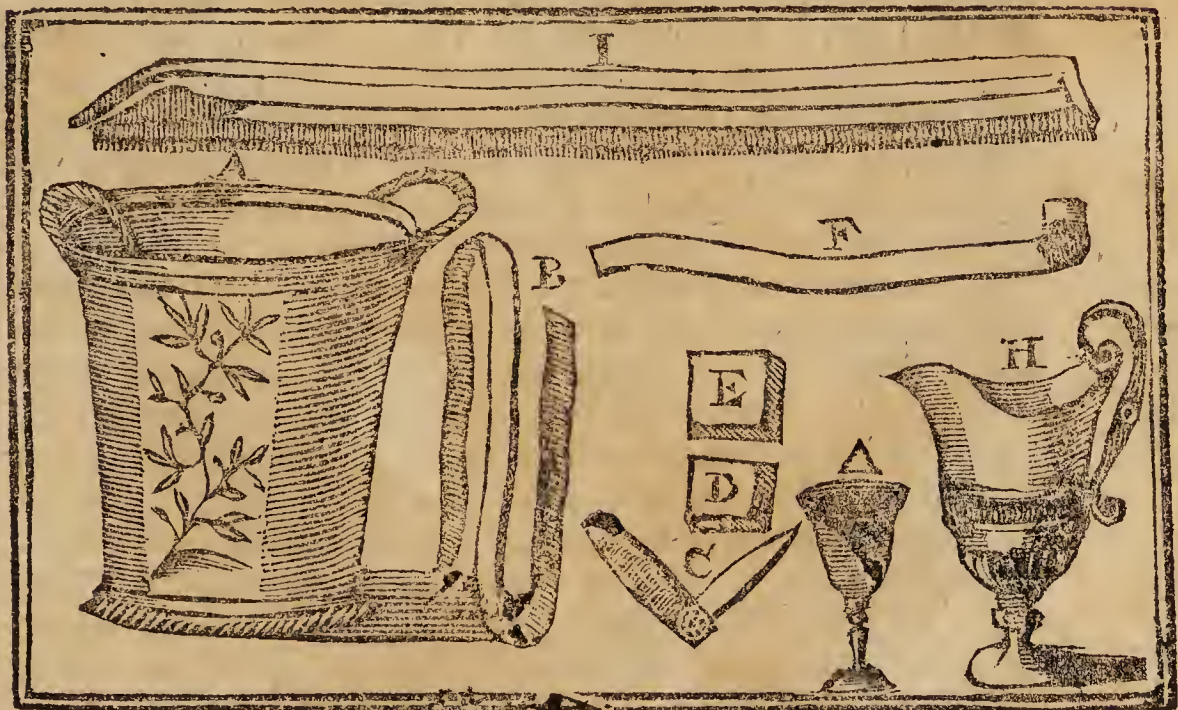
The second method is very Ancient, but little practis'd; 'tis to mark with the Ink K, the Skin on the *Varix*, for the length of three Fingers breadth, and then by Pinching raise it up, to hold one side, and cause the other to be held by a Ser- vant, then with the Incision Knife L, to cut the Skin at the mark'd place, and having loosen'd it to dissect with the Pen- knife M, or the Tooth-pick N, the varicous Vessels; to run under them the Needle O, threaded with the two Threads P P, to cut the Threads near the Needle, and slip the one above the *Varix*, and the other below it, and tie them a large Inch di- stant from each other, in order to leave room to cut the Vein betwixt the two Threads with the Scissars Q, or to leave it whole as we think fit. We dress this Wound like others, lay- ing on it the little Pledget R, cover'd with a defensative for the first Day, then the Plaister S, the Bolster T, and rol- ling it up with the Bandage with two ends V, to keep it tight: We procure its Suppuration by a Digestive, afterwards in time expect the falling of the two Threads, and cleanse, in- carnate and cicatrise the Wound.

I wonder that the Ancients did not order the application of the actual Caustery to the Veins, as is practis'd to Horses, but contented themselves with a potential one; for they advise us to lay a great Stone on the *Varix*, that when the Scar is fall'n off, we may procure the Generation of sound Flesh to fill up the vacuity in the Purse of the *Varix*, and tell us it's a certain way of curing it.

Of all these Methods the best is the Freight Stocking; for if we should very much rely on Astringents, and would make use of them, they would prove of little effect, if not sustain'd by Bandage; and besides, if a Leg were interspers'd with several *Varices*, a good well made Bandage would equally press on, and take them all in, and may alone Cure it without any other assistance.

But if the *Varix* is such an one as absolutely requires opening, I advise doing it the plain way with the Lancet, and not by that cruel and painful Operation taught and practis'd by the Ancients. The simple Incision preserves the use of the Vein, which may, when the Orifice is once healed up, again afford to the Blood its ordinary Road; but by the old way, the Ligatures cutting the Vein, the Blood is deprived of that Channel, tho' that Liquor has occasion for all its ways to return to its source, and the consequences of retrenching any of them cannot but be fatal.

FIGURE XLIX. For the BLEEDING of the FOOT.



I Have been endeavouring to instruct you in whatever re- *Bleeding of* lates to Bleeding in general. I have shew'd you how to *the Foot* perform that of the Arm; and if I have not yet mentioned *different* that of the Foot, which I have deferr'd to this Day, 'twas for *from that* two Reasons, one of which is that 'tis perform'd on a part of *the* which is destin'd for the Subject of this Day's Operations; and *Arm.* the other, because 'tis accompanied with very different Circumstances from that of the Arm, which required a separate Article.

Hours proper for Bleeding.

The first particular in which this sort of *Phlebotomy* differs from the other, is the time of performing it; that of the Arm is to be done in the Morning, and that on the Foot in the Evening; the first requires Rest, and the other Action before 'tis perform'd. This must be understood when the time is in our choice, for in a pressing necessity both of them are to be performed at any Hour of the Day. 'Tis not without reason, that the Morning is chosen to bleed in the Arm, it being really the best time, because the Blood having freely circulated whilst the Patient rested in his Bed, the Veins rise the better, and the Blood flies out the brisker when the Vein is open'd. 'Tis also more proper to bleed in the Bed than up, because the warmth of the Bed contributes more to the performance of that Operation, than cooling after being risen; but on the contrary, in Bleeding of the Feet, the Patient is to walk first, that the Blood descending into that part, may raise and discover the Veins, and may issue out more plentifully, than it would if the part had been rested. Daily Experience proves what I say, and every Body when he pulls off his Shoes at Night finds the Veins of his Foot more risen than they were in the Morning when he rose.

Circumstance in Bleeding the Foot.

These Bleedings also differ in the manner of their performance; we bleed the Foot in warm Water, but don't treat the Arm so; this is done to raise the Veins, which being farther from the Heart, are less than those of the Arm: 'Tis the same with Branches of Trees which are thickest nearest the Trunk of the Tree, and diminish in proportion to their distance from it, wherefore we make use of hot Water to the Foot, to supply the smallness and distance of the Veins.

As soon as we are entred the Patient's Chamber, we are to order some Water to be heat, if it be not provided before we come: Whilst that is doing, we are to prepare another Vessel to perform the Operation, in which we spread a Napkin for neatness sake, that the Feet may not touch the bottom, which is commonly of Wood or Copper, as a Tub or Kettle; and for the greater neatness we are to lay another Napkin on the Vessel, to strain the Water thro' it, to clear it from any fowlness which may have fallen into it whilst heating. We are not to perform the Bleeding in the same Kettle in which the Water was heated, because that having been on the Fire it would burn the Patient's Feet or Legs. The most convenient Vessels are the Earthen Pots A, which the Ladies use to wash their Feet; besides that they are very clean, and therefore there is no need of spreading a Napkin at the bottom, they are also so deep as to wet the Legs to the Knee.

Why both Feet to be put into the hot Water.

The Water being pour'd in before the approach of the Patient, the Chirurgeon is to examine whether it be of a proper warmth; observing withal, that 'tis to be a little hotter than it ought, because it sometimes has time to cool before the Patient

Patient has put his Feet into it, and with a little cold Water he can cool it to what degree he pleases. Though one Foot is only to be bled, yet the Patient is to be obliged to put both into the Water, for three Reasons; the first is, that 'tis more convenient to him to have them both in, than one only; the second is, that the Blood runs more freely towards the lower Parts when they are both warm'd, than when only one is; and the third is, that if the Chirurgeon finds one of them too difficult to be bled, the other is at hand, and he is at Liberty to chuse the easiest, without being obliged to put the other into the Water, and stay 'till 'tis warm'd.

'Tis a Mistake to believe that we ought rather to bleed one Foot than the other in some Distempers. The great Artery which receives the Blood from the Heart to dispatch it through the whole Machine, divides it self above the *Os-sacrum* into two large Branches which go into the Thighs, and from thence to the Legs; so that the Blood of both of them coming from the same Source, 'tis indifferent which foot we take. For which reason, when the Patient asks the Physician who prescribes the bleeding, on which Foot it is to be performed, he ought to answer that which the Chirurgeon pleases, because if the Foot which he prescribes prove so difficult that 'tis impossible to bleed it, he will not consent to the Chirurgeon's taking the other; or if he yields to the Chirurgeon's Reasons, 'tis with Difficulty; and if there do not result from that bleeding the good Effects which he proposed, he ascribes the Cause to this Alteration; and sometimes being obliged to perform it on the prescribed Foot, it does not prove so well, nor so plentiful, because the Veins are there too small; whereas if the Chirurgeon had been left to his Liberty to have performed it on the other Foot, the Veins were there perhaps larger, and he had succeeded to the Patient's Wish.

The Patient's Feet being in the Water, we are to leave them there for some time to warm them, and in the meantime give order for the heating of more Water in a Pot or Skillet, that we may always be provided with hot Water, in case we happen to be too long employed in quest of the Vein, or to re-heat it, when the too tender Patient will not at first going into it bear it hot enough to raise the Vein. The Chirurgeon is to call for a Chair to seat himself directly opposite to the Patient, lay a Towel folded several times double on his Knee, and rub down his Legs to facilitate the Descent of the Blood towards the Foot. *Precaution*

When the Chirurgeon believes the Veins sufficiently risen, he takes out of the Water the Foot which he designs to bleed, and having laid it on his left Knee if the right Foot, and on his right Knee if the left Foot, he wipes it with his Towel, and then puts on the Ligature B. two Fingers breadth above the Ankles, drawing it but moderately tight; he makes two

Circumvolutions as in the Arm, and ties it in a slip Knot towards the outward Ankle; then having felt whether the Veins answer, he returns the Foot into the Water, where he lets it remain for some time.

*Of the Li-
gature.*

In demonstrating the bleeding in the Arm, I hinted that the Ligature should be of woollen Cloth; but for that of the Foot, it must be of Searlet Tape or Ribban, because the Cloth being wetted, would slacken, which the other will not; and a Cloth Ligature when we are forced to draw it hard certainly breaks, which proves very troublesome, and retards the bleeding, whilst the Chirurgeon is forced to hunt for another Ligature: Whilst the Foot is in the Water this second time, the Veins begin to swell, and in the Interim the Chirurgeon takes out of his Case the Lancet C, which he opens and puts in his Mouth, as in bleeding of the Arm.

*Choice of
the Vein.*

He then takes up the Foot again, replaces it on his Knee, and draws the Ligament harder to keep the Skin and the Vein in the greater Subjection: And having observed the same Precautions with regard to the Light which are elsewhere hinted, he fixes it to his Point of Sight, either within or without the Foot, as he finds most convenient; after having examined the Veins, he pitches on that which is the most apparent and highest risen, which is generally that call'd the *Saphana*, he opens it either above or below the Ankle, without striking in too deep, for fear of pricking the *Periosteum*, which is not far off.

*Signs of the
quantity of
the Blood.*

The Vein being opened, he causes the Foot to be returned into the Water. If he thinks the Ligature too tight, he slackens it a little; but if the Blood flie out in an arched manner, he does not touch it, because that is a Proof that 'tis not too hard: He suffers the quantity of Blood prescribed to run out, judging of it by the time it takes up, by the Colour of the Water being more or less red, and by the Tincture which the Corner of a Napkin dipt in that Water receives. About the end of the bleeding, we see swim on the Water small white Bubbles, which are the Fibres of the Blood, from whence the red Liquor is separated by the Water, which forming viscous Globules like Bubbles, swim from one side to the other, and stick to the Legs: When we see these appear, 'tis a certain sign that we have taken a sufficient quantity of Blood, and that there is at least three Porrengers full. We are then to loosen the Ligature whilst the Foot remains yet in the Water, where we keep it some Moments to allow the Vein time to empty it self.

*Conduct
after it.*

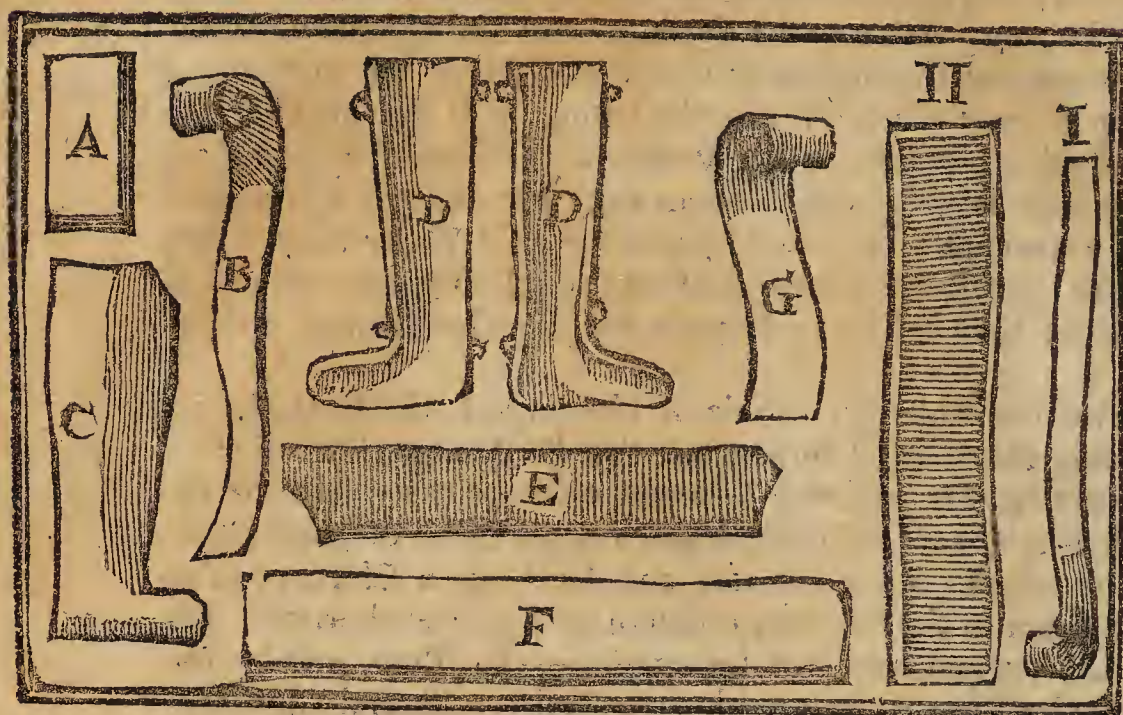
The Foot then drawn out of the Water and wip'd, we lay on the Orifice a small square Bolster E, somewhat thick, and with the Band F, a little longer than that for the Arm, we frame the Bandage, which we call the Stirrup, from its being of that Shape, and the same which is represented in the se-

venth Plate of the first Demonstration marked G. We then dry the other Foot, and return it into the Bed of the Patient, to whom we give a Glas of Water Δ immediately after the bleeding.

We are to keep the Blood, that the Physician, when he makes his Visit, may judge of its Quality, and the Quantity drawn. When the Patients have a Sympathetical Faith, we may throw a Cup of cold Water H into their Blood; if by this Rule the Blood which remains in the Veins may be heated, by mingling that which is come out of them with hot Water; by the same reason 'twill also be cooled by pouring cold Water into it: 'Tis easie to gratifie them on this Head, and cheaply cure their Imagination; then with the Napkin we dry the Lancet, and retire.

I shall conclude this Article of bleeding of the Foot, by advertising the young Chirurgeon, that he don't perform this Operation on Maidens and Women, without the Advice of the Physician. Some of them feign a Suppression of their Courses, or some other Disease, and send for a Chirurgeon to bleed them in the Foot with design to procure Abortion: But the Chirurgeon must not be caught in this Trap, and by too much Credulity comply with their Desires: Several Chirurgeons have fallen into great Troubles on this Account, the World being resolved to have them guilty (though innocent) of the Crime of some Wenches which miscarried after these sorts of Bleedings; wherefore in this suspicious Case, he ought never to perform this Operation without being backed by the Prescription of a Physician.

FIGURE L. For DISTORTED FEET.



For distort-
ed and de-
formed Feet

Latin
Names.

Causes
of these
Distortions.

Remedies
when natu-
ral.

WE see some Persons whose Feet are wrong turn'd and distorted, which Misfortune does not only occasion a Deformity, but very much incommodes the Patients in walking. Of these, some have their Feet turned outwards, and are called in *Latin Valgi*; others inwards, and are termed *Vari*, and both are vulgarly called Stump-footed.

These sorts of Contorsions on the Feet proceed from three Causes, either from the Birth, when a Child comes into the World with mishapen Feet, or by Accident, as by a Luxation, a Blow, or the Settlement of Humours which have form'd an *Anchylosis*, or a contracted Habit, as when a Child is accustomed to turn its Feet inward. When these ill Dispositions come by Birth, they are difficult to cure; but when they are caused by any ill Habit which the Child may have contracted, we may remedy them, by placing a little bit of Paste-board A, to incline the Foot to return to its natural Shape; this is to be fastened with the small Band B, drawn a little tight; and by the Care which the Nurse is to take when she dresses the Child, to place its Feet in a proper Posture, and to fix them so by Bands which she is to draw tighter at the Feet than any other part: Whereas when the Infant is ill shaped from its first Formation, (as it happened to one of my Relations, whose Mother, when with Child of him, look'd very earnestly at a Beggar, whose Foot was turn'd inwards, whence he was born with a Foot like that of the Beggar) we in vain tried all ways without being able to correct the Deformity; and

and at present, my Relation which I just now mentioned, at the Age of thirty, has his Foot continued in the same Shape as he brought it into the World.

When a Foot has lost its natural Figure by some Accident, Or accident as a Luxation, a Wound by Fire, which may have bruised the Bone, or an *Anchylosis* occasioned by a dried viscous Humour, which deprives the Bones which compose it of their ordinary Motion, the Chirurgeon is to examine the Disorder which he finds in the Part, and to make use of proper Remedies to mollifie the Ligaments and Scars caused by that irregular Formation; of this sort are frequent Fomentations of Tripe-Broth, oleaginous Frictions and Cataplasmes, made with emollient and mucilaginous Herbs and Roots, as Marsh-mallows, Fenugreek, Linseed boil'd in new Beer, or Oil of Lillies. During the use of these Remedies, we daily, by a gentle Violence, attempt to move and turn the Foot, and apply strong Pasteboards, wooden Splinters, or thin Iron Plates, which we fasten with a Band, in order to hold the Foot in that Posture to which we design to bring it.

If by these we fear we can't attain our End, we have recourse to Machines or Engines, which are Leather or Iron Boots C, which we cause to be proportion'd to the Disposition of the Foot which we wou'd reduce; but it frequently happening, that in these Boots made all in one piece we cannot without Difficulty get the deformed Foot into them; or when it is there, 'tis neither equally nor sufficiently compressed to restore the Part to its former Shape; for which reason we are then to make them consist of two pieces D D, like those Cases made for small portable pieces of Plate, of unequal bulk in their Extent, to which these Cases are proportion'd, being divided, or opening longways, and shutting with small Hooks: We fix the Foot then in one of these Parts, and then clapping Effect of on the other Part, and fastening it with the Hooks, the Foot is the Clay of so close cased up, that in Process of Time 'tis forced into its the certain natural Figure. In short, if the Callosities and Contractions Waters. of the Ligaments don't yield to these Remedies and Engines, we are to send the Patients to *Bourbon* or *Barrege*, where the Clay of those Waters are endued with a Balsamic Vertue, which may restore Motion to those Parts, of which we have seen good Effects on several Officers of the Army, who after great Wounds in the Joints, have been restored, or at least relieved by them when they have not been perfectly cured.

It frequently happens that we see Children whose Joints Of big are bigger than they ought to be, 'tis at the ends of the Bones Joints. where these Articulations grow, which being more porous than the rest of the Bone, and the Porosities being full of medullary Juice, are not so soon dried in some as others, either by reason of Imbecility, or the Weakness of the natural Heat: Which occasions these Joints to remain gross and large, 'till the natural

natural Heat takes hold of them, ossifies the Parts, and gives them their due degree of Hardness: The Nature of these Bones is very like those in a Knuckle of Veal, which we find full of a marrowy Juice, and so tender and porous that they easily yield to the Teeth, wherefore we are not to be surprized, if those of some Children who are so tender, are longer acquiring their natural Solidity.

**Of crooked
Bones.**

We also find some Children whose Thigh and Leg Bones bend and grow like a Bow: When this happens, 'tis the Fault of the Mothers or Nurses, who out of an earnest Desire to see them go early, oblige those Parts to sustain the Mass of the Body, thereby charging it with a weight too heavy for it to bear, which constrains the Leg and Thigh-bones to bend under the Burthen, and yield by little and little, when they obstinately persist in making 'em to go before they are strong enough; and 'tis observable, that these poor Children endeavour to rest their Knees one against the other to support themselves, which distorts their Legs for their whole Life.

When the Joints of a Child are knotted, to use the vulgar Expression, and when we perceive the bending of the Knee, we are not to apply to any Operation, but keep the Child lying or sitting in a Chair, and not put it to go; but stay 'till the Joints have assumed their natural State, and these Bones come to a perfect Ossification, both which are the Work of Time, assisted by the natural Heat. Wherefore we ought not impatiently to desire a Child's going before the Bones are perfected, and have acquired Strength enough to bear the weight of the Body; for we must not desire more of them than they are able to perform.

**Definition
of a Di-
stortion by
Strain.**

A Distortion is an Effort or Strain in the Joint of the Foot, by a violent and painful Extension of the Ligaments which fasten it to the Bone of the Leg.

Distortions are of two sorts, one is when the Ligaments of the outward Ankle have suffer'd; and the other, when those of the inward one are hurt: The first is, when the Foot is turn'd inwards; and the second, when it is turned outwards; this rarely happens, but the other is very frequent.

Its Causes.

The one and the other are occasioned by false Steps made in walking, running, or leaping, and when the Patient's Foot comes to the Ground, if it does not meet with a plain even Ground, it yields and bends that way which the Floor or Ground inclines it, as it happened at *Bourdeaux* to an Officer of the King's hundred Swiss-Guards, who jumping from a Boat to the Shoar, met with an uneven Pavement, which gave him one of the most violent Strains or Distortions which I ever saw: The weight of his Body (one of the heaviest) contributed to augment it, and it was accompanied with an Extravasation of Blood throughout the whole Foot and Leg, which obliged me to bleed him five times; and I was my self apprehensive

hensive of a Mortification, by reason of the whole Leg's being so furcharged with extravated Blood and Humours: He was forced to stay at *Bordeaux*, and did not come up to us before we reach'd *Tolouze*.

Some Practitioners begin their *Apparatus*, with clapping the Foot into a Pail of very cold Spring Water, pretending that there are no Repercussives stronger than this, and that the Coldness of the Water contracts the too much extended Ligaments, and prevents any Flux of Humours falling on the Part: Others, as an infallible Remedy, advise us to take a pickled Herring, beat it in a Mortar, and lay it on the Strain in form of a Cataplasme. But for my part I make use of a little Defensive made with the Whites of Eggs, Oil-rosat, and powder'd Allom, which I spread on the bit of Linnen E, for the two first Days, covering it with the Bolster F, and the Bandage G, drawn a little tight.

On the third Day I prepare an Aromatic and Astringent Wine, with thick Wine, Roses, Wormwood, Rosemary, Pomegranate Rinds, Talls, Allom and common Salt. With this Wine very hot I foment the Foot, and lay on it a Bolster dipt in the same, and over that a Bandage, which I draw tighter than the former.

The Application of the Bolster and Bandage contribute as much to the Cure of the Strain, as the Remedies, wherefore it ought to be methodically applied. The Bolster is to be four double, about four Fingers breadth broad, and about half an Ell long; we are to fix its middle on the Sole of the Foot, the two Ends coming to cross on the Instep; and each of them ending with a Circumvolution which takes in the Ankles. The Band is to be of the breadth of two Fingers, and two Ells long; we place the first end opposite to the Strain, that having passed under the Feet, we may mount it up again, and keep it in a strait Posture; we continue these Circumvolutions which all cross the Instep, and end by a circular one above the Ankles; and if neat performed, it is to represent a Spica on the Foot.

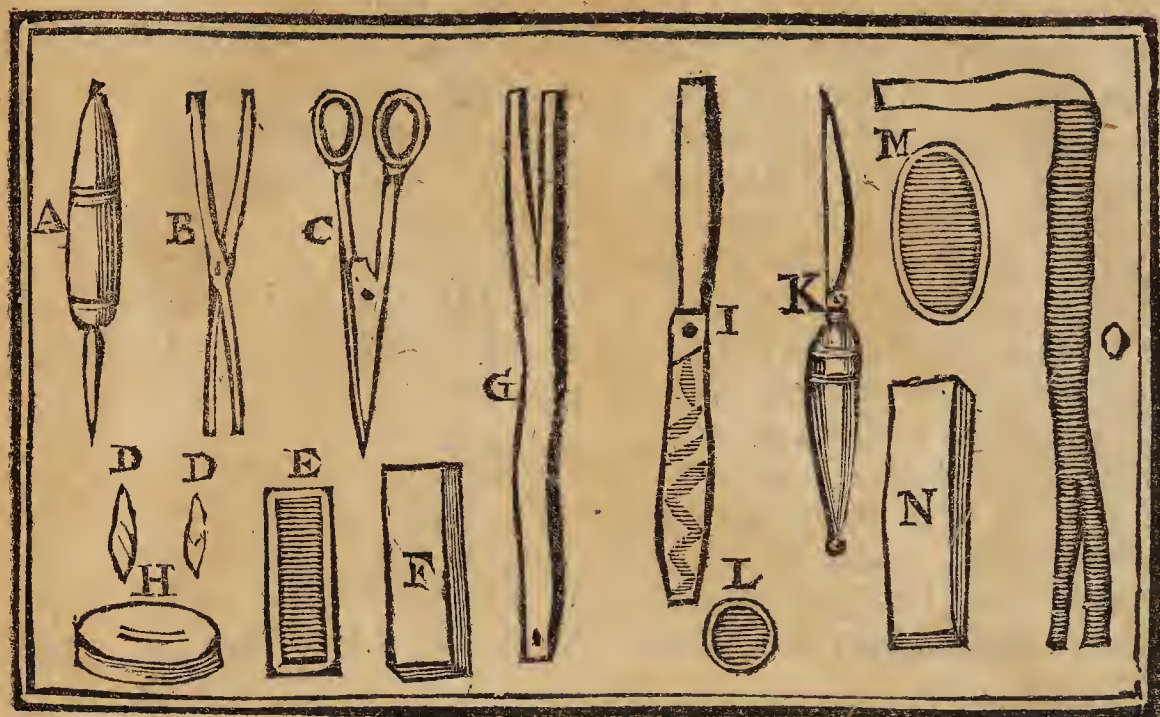
Manner of Application.

When we have made use of this Wine for ten or twelve Days, we lay on the astringent Scar-cloth H, extended on a bit of Leather, and over that fix on the plain Band I, shorter and narrower than the first, with which we make the same Circumvolutions, and whose last end we sowe, in order to leave it on 'till the Patient finds his Foot has no further occasion for a Band.

Which time does not always come so soon as we wish; for when a Strain has been great, we sometimes feel it whole Years; and though we tread never so little on an inclining Ground, we find our Foot disposed to yield that way which it has before been turned, wherefore we are carefully to look where we set our Foot, 'till it has recovered its former Strength.

FIGURE

FIGURE LI. For CALLOSITIES and CORNS.



Vicious Ex- **T**HE great Toe Nail sometimes grows so far over the sides *creascencies* of the Toe, that it enters the Flesh, and pricking it causes *of the Nail* a continual Pain, whence the Patient cannot without difficulty *of the great* go: To this pierced Flesh grows an Excrescence which re- *Toe.* ascends to the body of the Nail. Some Persons have the constancy to bear the consuming this superfluous Flesh with calcin'd Allom pulveriz'd, and laying on desiccative Plaisters, and endeavouring to cicatrize it: But all this is Labour in vain, as long as the points of the Nail continue there, and we can never cure it without the removal of those Bodies, now become exotic by their bulk when they exceed that prescribed by Nature, and by their extream painful pressure of those Parts.

One of its
Causes.

This Indisposition is occasion'd by a too stiff lining of the upper Leather of the Shooe, which pressing the great Toe against the Sole, forces one or both sides of the Nail into the Flesh; from which continual pressure it penetrates into it, grows and produces this Indisposition, which to the Eyes of Persons unconcerned seems very light, and yet proves insupportable to those afflicted with it: To avoid this Evil, we are to wear Shooes whose Toe-linings are soft and rais'd, which is a Rule more particularly to be observed by those whose great Toe-nails are hard and thick, that they may not be pressed too close: 'Tis observed that bare-footed Friars are not addicted to this Distemper, the Nail of their great Toe not being straiten'd by a Shooe, but being left at liberty to grow out as far as it can shoot.

No Chirurgical Remedies can cure this Indisposition without *Operations* the Operation, no other way being left besides cutting out all *for it.* that part of the Nail which has insinuated it self into the Flesh. We begin then with bathing the Foot in hot Water for some time, in order in some degree to soften the Nail which we design to cut: The Patient being then placed on a higher Seat than that on which the Chirurgeon sits opposite against him with a Napkin on his Knee; he causes the Patient to lay his Foot upon it, and with the small Incision-knife A, shap'd like a Pen-knife, he long-ways cuts off the part of the Nail which he thinks is to be taken off; when he has separated it from the body of the Nail with the Pincers B, he lays hold on it and gently draws it, for fear of putting the Patient to too much Pain, by a violent pulling; if it still sticks too close, we are gently to separate it before we draw it out.

The Scissars C seem to me to be more proper in this case than *Scissars* the Incision-knife; and I have cut several, clapping one of the *better than* Points under, and the other above the Nail, and cutting several times 'till I came to the Root, and have separated this part from the rest of the Nail, which I gently draw off with the Pincers. *the Lancet.*

This Operation, though but trivial, is yet very painful, inso- *Dressing* much that the Patients cannot endure it without crying out: *after it.* But the Chirurgeon is not to be alarmed at them, but taking no notice of them he is to proceed on, and be very quick in the performance; for as soon as the piece of the Nail is taken out, the Pain is over, and the Patient passes from a suffering Condition to Ease, which makes him forget his former Pain. We lay on the place where the Nail has been cut out one of the two Stopples or Pledgets D D dipt in Lime-Water, or some other Desiccative, a Plaister of Ceruse, or *de Minto* E, a Bolster F, and fix on the narrow Band G, with which we make several Circumvolutions about the Toe: We advise the Patient to refrain from walking for some Days, to avoid any Flux of Humours to the part, and dress it daily, 'till cicatrising, the place where the Nail was comes to be fill'd up. If there supervenes any carneous Excrecence, we are to consume it with the burnt Allom in the Box H.

But it is not enough to have cured the present Evil, we are to prevent its return, which seldom fails when the Nail comes to grow again. There is an infallible way of hindring a Relapse, which some make a Secret of; 'tis to scrape the Nail every Month with a bit of Glass, 'till it becomes so thin as to yield to the touch; which is a fact founded on Reason and Experience, for the Nail being weaken'd in the middle, the two sides shrink towards the Center, and keep at a distance from the Flesh; and besides, the nouriture of the Nail is employ'd in repairing what the Glass has taken off, and not in shooting it out on the sides, which hinders its hurting the adjoining Flesh; and

and what ought further to engage us to make use of this Method, is, that all those who practise it tell us that before they fell into it, they were obliged from time to time to have recourse to Operation; but that since they have scraped their Nails they find themselves perfectly easie.

Of Callosities.

The Callosities which grow on the sole of the Foot are not look'd on as Indispositions, but light Inconveniences which Fatigue the Patient in walking; they are hard Bodies resembling Horn, which grow on several parts of the sole of the Foot; the Ladies which ride continually in Coaches are never troubled with them, but those who walk much are subject to them; and by the same reason that they grow on the Buttocks of those who frequently ride Post, they happen to those who are continually Walking.

When these Callosities are become thick, and as dry and hard as a Horn, they pain the Person in going, because that they occasion the Mortification of the adjoining Flesh by the weight of the Body which rests on them. The Pain occasion'd by these sorts of Mortifications I have seen prove the cause of a flux of Humours, accompanied with a Tumour and Redness, and sometimes with an Abscess, particularly under the Articulation of the great Toe, with the first Bone of the *Metatarsus*, which is the place where these Callosities most frequently grow.

The proper Operation for it.

The proper Operation for Callosities is so very easie, that every Man may himself perform it; it consisting in no more than barely cutting them off with the Razor I, or the small Knife K, made for that purpose, after having soak'd the Feet in warm Water, or coming out of a Bath; but those who will not submit to any such precautions, either cut them off themselves, or cause them to be pared off whenever they put off their Shooes, because the Foot being at that time moist, 'tis easier done than in the Morning when dry: They must be cut gently, and taken off by thin slices, as Farriers do when they pare Horses Feet; and particular care must be taken that we don't cut too deep; for besides the Pain which that will occasion, it may draw on some ill Consequences, as we have seen but too often in those which have cut them to the Quick.

Renovation of the Operation.

When we have once began to pare the Feet, that Practice must be continued from time to time, because that these Callosities grow and return like Nails; and no directions for the performance of this Operation can be prescribed, it being to be practis'd according to the time they take to return, of which we are advertised by the Pain which we begin to feel in going, which augments as they harden, and which we cannot get rid of any other way than by cutting or paring them again: But yet I should always advise the Persons troubled with these Callosities to cause them to be cut by a Chirurgion's Apprentice, who is more practis'd and handy in the management of the Razor and the Incision-Knife, than the Person himself, who running the risque of wounding himself, rashly exposes himself

himself to the cruel Consequences which may attend that hurt.

'Tis not the Sole of the Foot alone which is attack'd by these *Of Corns in* Callosities, they also grow on the Toes and are called Corns, *the Foot.* and are those commonly called the Corns of the Feet: They are small round Callosities, one part of which pushes out, and the other is rooted in the Toe, which occasions a pain when they are pressed, and more in some Weather than others; whence 'tis that those troubled with them have an Almanack in their Feet, which points out and predicts the Alteration of the Weather.

I have already hinted that Women which seldom go on Foot have no Callosities at the bottom of their Feet; but they affecting the wearing of nice shap'd picked-toed Shooes, which extremely pinch their Toes, are very much afflicted with Corns, which prove painful, and which yet they resolutely endure rather than bear an ill-shap'd Shooe. Those Men who are also fond of strait Shooes, are not more exempt from these Inconveniencies than Women; but those who wear wide and easie Shooes, know nothing of them, they proceeding only from the pinching of the Feet; of the truth of which the bare-foot Friars are an evident proof, they never having any Corns on their Feet.

The number of Remedies for Corns is as numerous as that *Several* of the Persons troubled with them, every Person having his *Remedies* peculiar one which he yet uses and prefers before the rest; Men *for them.* commonly try what they are taught, and stick by those Methods which they imagin'd to have given them the most ease: But, in general, all emollient Ingredients do good, because they facilitate our cutting them out, or evulsion, and the pain which they give results from their hardness. The Leaves of Mari-gold, Galega or Goats-rue, or some other Plant, soft Wax, the mucilaginous Plaister, or that of *Diapalma* L, kept continually on it, contrive very much to mollifie them, and ease the Pain.

I have seen some Persons with their Nails extirpate part of *Precaution* the Corns, and some time after, when they were again grown *with regard* to the same bulk, do the same again: But I should rather chuse *to Cutting.* to have them cut with the little Knife K, by the hands of a dextrous Chirurgeon practis'd in this Operation, since 'tis not always indifferent who does it; for when the Corn is on the Joint of one of the Toes, if we should cut too deep we might hurt the declining Tendon of the Toes, which might be attended by some pernicious Accidents; wherefore 'tis better not to cut always too much, but to do it often, than to hazard the touching of this Tendon, which would be of dangerous Consequence. We are then to lay on the Plaister M, the Bolster N, and the narrow Band O, which are to continue on for some Days.

I have formerly seen a Man at *Paris*, who continually strolled about the Streets the whole Day crying incessantly, *Have you any Corns in your Feet or Toes, I take them out without Pain*; but am not able to tell you whether he was as good as his word: But if he was, he was very ill paid, for he was very meanly and beggarly cloath'd. I believe he may be rank'd amongst the Tooth-drawers, which always pretend they will not put their Patients to any pain, though they know to the contrary; whence that Proverb, *He lyes like a Tooth-drawer*; for if he had been dextrous enough to take out Corns without Pain, as he said, he might have kept his Coach.

But since we are fallen on these great Pretenders, in the Conclusion of this Demonstration, I would say something of those who have appear'd on the Stage for some time; besides those which I have already mentioned in the course of these Demonstrations, there are ten or twelve.

Story of
Caretto.

Caretto deserves the first Place, by reason he caused himself to be stiled a Marquis. This was an *Italian*, who after having publish'd a miraculous Remedy of his Preparation, which he sold at two Pistoles the Drop, pretended to Cure the Dauphiness, and undertook the Marshal of *Luxembourg*, whose Bleeding he hinder'd in an Inflammation of the Breast, of which that General died; and by reason that having given him two Ounces of *Diacodium*, he calm'd the Agitation for some Hours, the World gave out that he deserv'd a Statue of Gold, but the supervening Death alter'd the Stile.

Of two Em-
pyrical Ca-
pucins.

Two *Capucins* appear'd, who caused it to be reported to the King, that from Foreign Countries, where they had Travell'd, they brought several Secrets unknown to other Men. His Majesty caused them to be lodged in the *Louvre*, and appointed them the Sum of fifteen hundred Livres to defray the Expence of their Preparations: The Charm of Novelty drew all *Paris* to them, and they distributed great quantities of their Medicines, but of any miraculous Performances by them we never had any account. Some time after they entered themselves into the Order of *Cluny*, one of them took the Name of the Abbot *Roussseau*, and courageously chose rather to dye than to be bled, because he had engaged himself on the side of those who are declared Enemies to that Operation; the other, the Abbot *Aignau*, who pretended to an excellent Remedy against the Small Pox, which he gave out to be a very secure Preservative against the coming of the Pustules, and being disfigur'd by them. This Medicine was at first taken by several, by way of prevention, for fear of having the Small-Pox. Besides which, about fifteen Months since two Persons of the first Quality being seiz'd by this Distemper made use of it, and met with two different Fates; one of them was the Duke of *Roquelaure*, who escaped, and the other Prince of *Epinoy*, who died, though they both took it with the same care, exactly conform to the print-

ed Paper which that Abbot took care to distribute to his Patients.

The Oxe-Doctor (for so was call'd a sort of Physician at *Of the Oxe-Segnelay in Burgundy*) pretended by the Inspection of Urines to *Doctor, famous for his Skill in Urines.* know all sorts of Diseases. Messengers crouded to him from all Parts with Viols full of Urine; of which several were sent from *Paris* with Mony to pay the Consultation: He gave every one such Answer as he thought fit; and like those who tell Fortunes by looking into the Hand, he told them abundance of Particulars which he observ'd in some of them, and 'twas enough for him to speak Truth sometimes to pass for an Oracle. I saw him at *Paris*, which Place he left somewhat disgusted at the *Parisians*, returning home. After this Journey the Urine did not travel so frequently, and by little and little forgot the way; and other Places following the Example of that City, very few were sent to him, and some Years after he was no more talk'd of.

Father *Guiron*, a *Cordelier*, in a Book of his Chimistry, teaches the Preparation of Medicines: These he endeavoured to distribute; his Superiors allow'd him to sell them and keep the Profit, provided he furnish'd those of the Convent that should have occasion for them *gratis*. He was a Person that neither wanted Cunning nor Assurance; he made some Friends who were serviceable to him of entering into the Order of *Cluni*, and a little while after he appear'd cloath'd like an Abbot. The Prince of *Isenghien* and several others try'd his Remedies, but we know with what Success. He continued to practice Physic at *Paris* under the Name of the *Abbé Guiron*.

An Apothecary in the County of *Avignon* some Years since appear'd at *Paris* with a new invented *Pastillum*, or odoriferous Ball, which he pretended to be a Secret which ought to make his Fortune, and that no Distemper was so obstinate but must yield to it. He obtain'd a Privilege to distribute it; and clapt up Bills of it all over *Paris*, and sold many of them at the beginning, because he parted with them at five Sols each; but this Pastil being composed of a little Sugar incorporated with a Grain of Arsenic, the strongest Poison we have, it had a fatal Effect on several who took it, and the rather, for that being to make a thousand of these aromatic Balls, he put in a thousand Grains of *Arsenic*, which he boil'd with as much Sugar as was requisite to make a thousand of these Balls: But the distribution of this Powder not being so exactly made, but that some of these Pastils had very little, and others above two Grains: Those who had met with them in which there were the least Poison, were but little incommoded by them; but they who took those in which was above a Grain of *Arsenic*, were almost poison'd, and proved very happy if they came off with Vomiting, though so severe as to bring up Blood. These dismal Effects of them undeceived the Publick; who then ceased to buy them.

Brother
Ange.

Of his Syrop
and Vege-
table Salt.

Brother *Ange*, a *Capucin*, of the Convent of the *Fauxbourg St. James*, had been formerly an Apothecary's Apprentice; his whole Knowledge lay in the Composition of some Remedies, and principally of a Syrop which he stiled *Mesenterical*, and which he obliged all those to take who apply'd to him: He ascrib'd to this Syrop such a distinguishing purgative Virtue, as that it always chose to carry off the Humours which ought to be expell'd: He had also a Vegetable Salt, which he exalted above all other Medicines. He was a good honest Man, and spake as he thought, for he believed it what he said it was. Thus set up with these two Remedies, he pass'd for an able Physician in the Suburbs where he lived, from whence his Reputation spread to *Paris*, and at last reach'd the Court, where the *Dauphiness*, who was indisposed, encouraged by the Report of the efficacy of his Medicines, desired to see him: He made no scruple of telling the Physicians the Drugs of which they were compos'd, nor did they oppose the Resolution of that Princess to make use of them. She tried them for fifteen Days, and finding no Relief from them, put several Questions to Brother *Ange* which somewhat displeased him, and dismissed him. In short, he return'd to his Convent very uneasie; that the *Dauphiness* had not so entire a Confidence in his Medicines as those of the Quarter where he lived.

The Abbot
de Belzé,
his ill Con-
duct.

The Abbot *de Belzé* was a *Norman* Priest which set up for a Physician: He was introduced by the Marshal *de Bellesons* to the *Dauphiness*; he purg'd her two and twenty times within the space of two Months, and at such times when 'tis improper to give Physic to Ladies; he managed her his own way; he acted both Physician and Apothecary together; he consulted no Body, and after that left her worse than he found her. He was dismissed with five hundred Pistoles. *Mademoiselle Besola*, and *Mademoiselle Patocle*, both Ladies of the Chamber to that Princess, and her Confidants, being willing to make their Court to their Mistress, also took some of the Abbot *Belzé's* Physic; but they both fell into a languishing Condition, and a continual Flux, of which they died one after another a little after the *Dauphiness*.

Effect of the
Remedies of
a Child-bed
Nurse. *Madam la Barriere*, a Nurse to Child-bed Women at *Paris*, was propos'd to the *Dauphiness*: This Woman was sent for; she for the space of fifteen Days apply'd Fomentations and other Remedies of the Class of those used by Child-bed Nurses; but they rather heated than afforded any ease, and she was sent away with two hundred Pistoles.

Another

Relation of
an Empyric

The *Sieur* was an Empyric Physician, at least he stiled himself one at *Paris*, where with Oil or Essence of *Guayacum*, of which he made a Secret, he was to render People Immortal; for whether they took it internally, or rubbed themselves with it externally, there was no Disease which was not immediately to vanish. One of the Almoners of the *Dauphiness* propos'd

propos'd him as a Man that would infallibly Cure that Princess. The Dauphin desired to see him, and after having heard him talk, caus'd the Dauphiness to be told, that he would not advise her to make use of that Man. Yet two Months after, on the Day of the Decease of that Princess, he appear'd again, and having got Introduction by means of the same Almoner, after having presum'd to feel her Pulse and Belly, he told her that he had cured more Patients than her, and that with a Clyster, in which he wou'd put some of his Essence, he wou'd make her void all the Impurities with which her Belly was fill'd. He went to Mr. *Riquear* to prepare this Clyster; but when he return'd to cause it to be given her, he found her in Convulsions, and in the Agony of Death, and she dy'd two Hours after. He went to *Paris*, and loudly proclaim'd that she had not dy'd, could she have taken his Remedy. The Public did not long enjoy his rare Secret, which was to have Immortaliz'd Men; for he himself three Months after waiting on some Person out, fell down his own Stairs, and being dangerously wounded, dy'd soon after.

The Doctor of *Chaudrais* made as much Noise, and was as much in Fashion as any of his Predecessors. *Chaudrais* is a small Hamlet compos'd of about five or six Houses near *Mante*; there lived a Peasant of very good Sense, who advis'd others to make use of sometimes an Herb, and at others a Root, according to the Disease with which they were afflicted; and because his Prescriptions grew numerous, he was honoured with the Title of Doctor, and he came to be known by no other Name than the *Chaudrais Doctor*. His Reputation spread in the Country where he lived, and flew as far as *Paris*, whence the Sick posted in Crowds to *Chaudrais*, where the People were forc'd to build Houses to lodge them. Those whose Distempers were light, were cured by the use of his Medicines, which consisted of pulveris'd Plants, or dry'd Roots; but obstinate and radicated Distempers did not yield. This Torrent of Patients lasted for three or four Years; but afterwards daily diminish'd by reason of the small relief which they received; and insensibly the *Chaudrais Doctor* came to nothing. But this honest Man is not to be blamed, he never gave himself out for more than he was, hunted after Patients, or stuck up his Remedies in the Streets, nor did he promise more than he perform'd. 'Twas the Publick Prepossession in his favour which rais'd him, and 'tis the disabusing the Publick which makes it at present abandon him.

Of the
Chaudrais
Doctor.

His Desli-
ny.

About ten Years past there started up a Man at *Versailles*, Of another who pretended to particular Secrets and Purgatives, which carried off all Distempers of what Nature soever: He found the Protection of several Persons of the first Quality who lodg'd at *Cheni*, which boasted his Merit, and spake very advantageously of him to the King. This happy beginning brought

Ill success
of his Phy-
sick.

brought him Patients who had no reason to praise him, because of the illeffects of his Medicines. But what soon shock'd him was, a Purge which he gave to *Madam Durafort*, Lady of the Wardrobe to *Madame*, for a Rheumatism for which I had bled her two Days before. This Purge threw her into a continual *Diarrhea*, attended with terrible Pains in the Belly; there came from her puré Blood, and she voided a sort of Gut of half an Ell long, which was examined by the Physicians and Chirurgeons of the Court. They concluded it to be the internal Membrane of the *Rectum*, and part of the *Colon*, which was separated and torn by the Violence of his Physick; and at last she died after having suffer'd as a Martyr, which drove away this Dispenser of Remedies, with a Prohibition to deter him from ever acting the Physician again.

Story of
the *Sieur*
Chambon.

The *Sieur Chambon*, formerly Chirurgeon of the Gallies at *Marseille*, and afterwards Physician in *Poland*, where he had Travell'd, being at *Paris*, apply'd himself to the dispensing of Medicines, which he did very cheap. But whether it be owing to Chance, or really People were reliev'd by them, there were some Persons who believing they ow'd their Lives to him, every where proclaimed his personal Merit, and the excellence of his Physic. His Practice encreas'd, Patients flock'd to him from all parts, he could not visit half of them he was sent for to, and in less than a Year his Name resounded thro' all *Paris*. But a little while after his Reputation diminished, he was put in Prison, and no more talk'd off.

The *Sieur*
Bouter a-
nother ex-
perienced
Physician.

The *Sieur Bouter* is the last that appear'd on this Stage: He came about a Year since to *Versailles* with a Composition of Pills, which he pretended to be of wonderful efficacy in all Disorders. Some People of Quality who had taken them Published their Merit: They talk'd of them to *Monseigneur Fagon*, who answer'd, that if they were so good as they said, 'twas proper that the King shou'd make a Present to the *Sieur Bouter*, in order to publish the Composition. He was also presented to the King, who order'd him to tell his first Physician of what they were compos'd, and that he would reward him. But he dreaded the Examination of such a Learned Man as the first Physician; and did not obey the King, but kept his Secret, which he soon repented; and during the time that by his Friends he sollicitated to obtain what he refus'd, he fell Sick at *Versailles* of an Inflammation of the Lower Belly, and being very replete, and having a Fever, he was advised to bleed; but he would yield to nothing, nor try any Remedy besides his own Pills daily, which so augmented the Inflammation of his Entrails, that he died the fourth Day of his Distemper, carrying his Secret with him to the other World.

The danger
of trusting
to Empyrics. These are not all that we might mention, there are yet some others which we shall pass over. But by the faithful Narration which I have just been giving you of these ten or
twelve

twelve Secret-mongers, we ought to infer how dangerous 'tis to trust ones self in the Hands of such People, who rashly undertake whatever offers. We are always to apply to the Source: the Physicians and Chirurgeons which have during their whole Life applied to the Study of Man and the Diseases with which he is attacked, are better able to Cure him, than those ignorant of the Arts.

There are also some Physicians and Chirurgeons who having acquir'd a Reputation in their own Country, perswade themselves that they shou'd shine at *Paris*, or the Court. They hear their Friends telling them, that if they were known they would obscure all those which are there. In this Confidence they come and split here, as we have often enough seen, and as appears at present in some Instances. I shall recite three or four, with which I shall conclude this Day. But shall speak only of the Dead, and let the others alone.

Monfieur *Rainsant*, a Physician at *Reims*, was accounted the *Story of Hippocrates of Champagne*, he was call'd in, and consulted in *Monfieur* all cases. He came to *Paris*, where he began to visit some Pa- *Rainsant*. tients; but he that was a Hero in his own Province, was scarce regarded here, nor did any Body rely on him. The Commission of Keeper of the King's Medals becoming vacant, Monsieur *de Louvoy* gave him that employ, which was better for him, and he discharg'd it as long as he lived; and when he dy'd 'twas forgotten that he was a Physician.

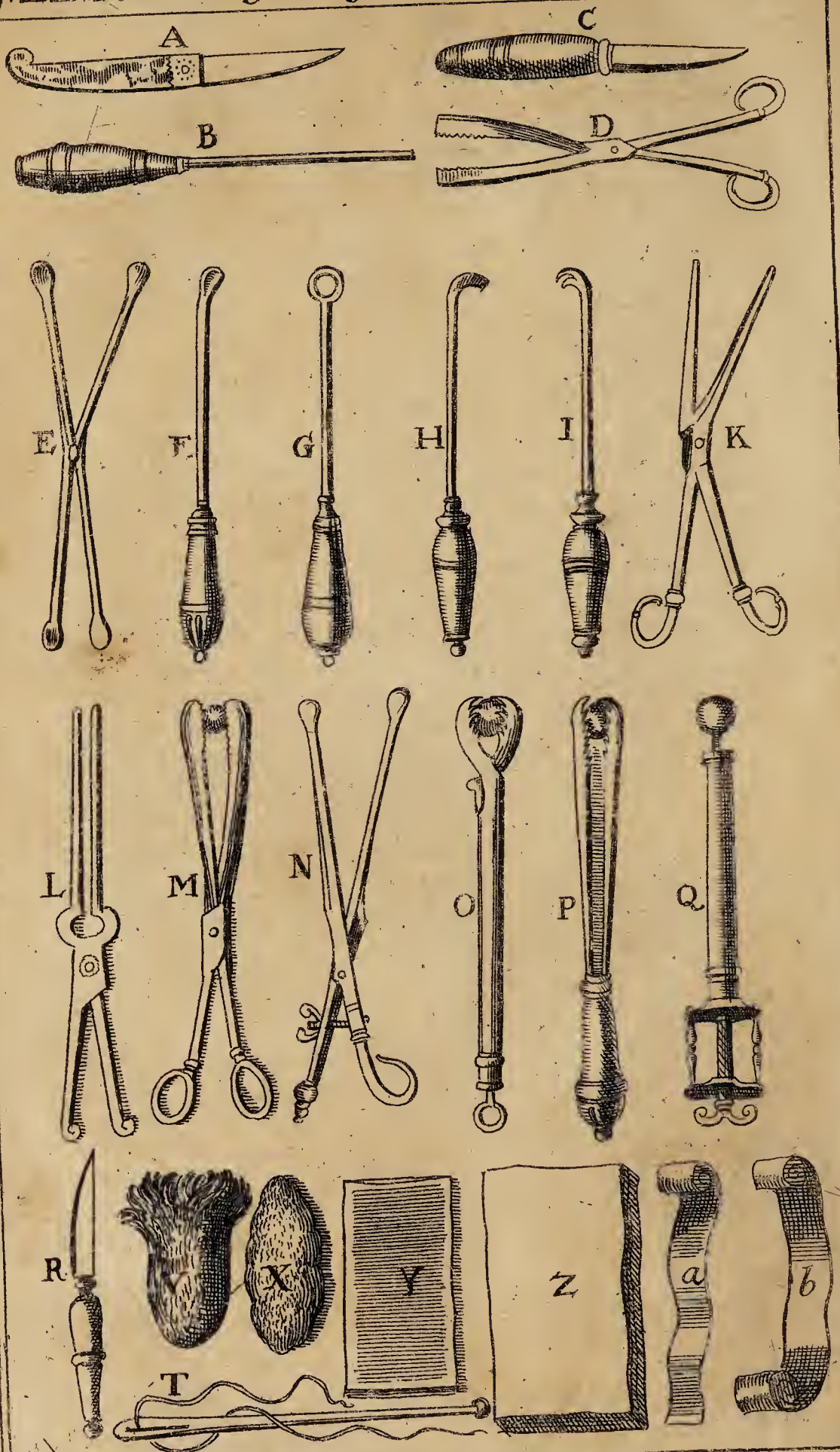
Monfieur *Pallieux*, a famous Physician of *Languedoc*, was *Mr. Pal-* consulted on the Distemper of Monsieur the Marquis *de Seigne-* *lieux*. *lay*, by a Letter sent to him by reason of the great Reputation he had acquired in that Province. By the Answer which he sent, he rendred the Cure of that Disease so facile, and laid down a Project so easy to be executed, that all the Family resolv'd to oblige him to come to perform the Cure himself, and the rather because the Court Physicians had made a direct contrary Prognostic. He set forwards in hopes of curing him, and his Remedy was the use of Woman's Milk which he advised him to as soon as he arriv'd. Monsieur *Fagon*, who had some Conferences with him, began to lay down the plan of the Distemper, and to put some Questions which did not a little perplex him. Mr. *Pallieux* answer'd only, that he had seen good Effects of Woman's Milk, and that he believ'd 'twou'd have the same here, not advancing anything further, in which he did best; for he knew he had to do with Learned Physicians. In short, the Milk not succeeding, he never said any thing else, than if that failed he knew no other Remedy. Some Days after he ask'd leave to depart which he obtained, and accordingly did, with a resolution never more to expose himself to such a severe Tryal.

The *Sieur de S. Donat*, a Chirurgeon of *Cisteron* in *Provence* *Of the* where he was also esteem'd a very able one, appeared at Court *Sieur de* *ten Dona*

ten or twelve Years past: He began with the Marechal of Rochefort's Lady, to whom he gave several Remedies for Nephritic Colic; he also gave Physic to several other Ladies was some time in Fashion, and tasted the Pleasure of Novelty but his Medicines being shock'd against the Marechal's Lady and many others, after eight Months stay at *Paris*, he found himself as much slighted as he was before hunted after. He believed he shou'd succeed better in the Army than among the Ladies: He petition'd for a Post, his Friends obtain'd what he desired; and he found that there was not one Chirurgeon in the Hospitals of the Army that was not a good one; but the Intendant, who gives a faithful Account of what has pass'd did not speak in his Favour. He return'd discontented at the end of the Campaign, and went again to *Cistéron*, complaining of the ill Taste of the Age, which did not render him the Justice which he deserved.

The Relation which you have heard leads us to the Conclusion which we ought to draw, which is, that every one ought to stay at Home; and that when a Chirurgeon has been so happy as to distinguish himself from others in a place where he wants none of the conveniencies of Life, he is to continue there, and peaceably enjoy the Condition in which he is placed. The Faculty of Physic at *Paris* is compos'd of above an hundred Doctors, all very able Men; and the Company of Chirurgeons of *S. Cosme* of more than two hundred Master Chirurgeons, who have all given Proofs of their Ability by a Master-piece of twenty five Acts, which they are oblig'd to perform in the presence of the Provosts. These two Bodies, fertile in learned and experienc'd Men, have always surpass'd all the others of *Europe*; and all those who have been urg'd on by a Spirit of Presumption to measure with them have been oblig'd to acknowledge their Superiority.

The End of the Ninth Demonstration.





The Tenth
DEMONSTRATION
OF
Chirurgical Operations.

Of those practised on all Parts of the
B O D Y.

Of the Extraction of EXOTIC
B O D I E S.

GENTLEMEN,



WE have in the precedent Demonstrations laid down all the Operations proper to each particular Part; and this day, in our tenth and last Meeting, we shall shew you those performed on all the Parts in general. They are usually intermixed with the particular Operations, but I thought it more proper to reserve them to a separate Demonstration, as well by reason that the other are sufficiently crowded, as because this Method seemed to me more instructive and commodious for the Students of Chirurgery.

These

*The great
number of
General O-
perations.*

These general Operations are numerous enough to take up more than one Demonstration; but having limited my self to the number of ten, and our Subject allowing us no longer time, I shall comprize them all in this Lecture, without omitting any of the Circumstances essential to them.

The first Chirurgeons mentioned no other Weapons than Arrows, Darts and Swords, by reason that in their time no other Instruments were used in War; wherefore we are not to be surprized if they say nothing of Cannons, Musquets, Bombs and Granadoes, of which they were wholly ignorant; the Rage of Men had not yet invented them; but finding that they were not sufficiently arm'd with Engines to kill one another, they thought it necessary to forge these last which destroy one Moiety of Mankind.

Though Arrows and Darts are no longer used in our Armies, the Chirurgeon ought yet to be instructed how to extract them, because he may travel into foreign Countries, where the barbarous Nations keep up the use of them for want of other Arms; and he must know that the Iron Points of these Instruments when left in a Wound, are more difficult, than a Musquet-Ball or a Splinter of a Grenade, because 'tis possible to draw out these last at the Orifice which they entred, but the others, by reason of their triangular Figure, cannot be gotten out without the making of a fresh Wound opposite to that occasioned by their Entrance.

*Reasons of
dilating the
Wound.*

Arrows are at a distance sent flying from a Bow, but Darts are lanced from a near Place by the Hand. When any Patient is wounded by either of these Weapons, we are to draw it out of the place into which 'tis stuck: But by our Endeavours to get it out, the Arrow breaks, or the Iron Point of the Dart is separated from the Stick to which 'twas fastened; these Points being so shap'd that generally 'tis not possible to pull them out at the same Orifice at which they entred. 'Tis the Chirurgeon's Part to know whether he can draw them out through the Wound, in which case he is to dilate it with the Incision Knife A, without which 'tis impossible for him to succeed; or if he is to extract this exotic Body through the opposite Part, he must then make a fresh Orifice, and thrust it out with the Impulsor B, the Wound being first sufficiently dilated. When 'tis in an Arm or a Thigh, we are without hesitation to drive it from one side to the other, and then thrust into the Wound a Seton, which more expedites its Cure, than if it had been drawn out at the Wound, which might then have occasioned a Laceration of the Muscles, which might have furnished Matter for, and occasioned an Abscess to follow.

*Difficulty
of extract-
ing them
out of the
Cavities.*

When a Dart is plunged into the Breast or Belly, 'tis not easy to draw it out: If the wounded Person will patiently stay 'till the Chirurgeon comes to dress him, by dilating the Wound he may gently draw it out; but when through his Impatience he turns

turns that Instrument on all sides, in order to get it out, that lacerates these Parts, and makes the Wound prove mortal. In a Carouse at *Verfailles*, a Youth was wounded with a Dart, which was lanced at a *Medusa*: A Chirurgeon immediately dilated the Wound, and drew out the Dart, and it was heal'd up in a little time.

The Savages are accused of poysoning the Points of their Arrows, and we are told that some of them in their Battels make use of empoison'd Arrows: I believe they may do it, but don't think there are any other Men so wicked as to push their Rage so far. If the Chirurgeon, by the Wound and Symptoms, suspects its being poisoned, he is to give the Patient Cordials, and dress the Wound with an Unguent composed of *Theriaca*, *Turpentine*, and Oil of *St. John's-Wort*.

It frequently happens that the Point of a Sword breaks when it meets with the Resistance of a Bone. If the broken Sword is to be come at, the Chirurgeon is to call for it, to enable him to guess how much of it remains in the Body: If it happen after a Battel, he must guess without that help. If he feels the bit of the Sword with his Probe, he is to begin with dilating the Wound, and with the Pincers endeavour to draw it out; if 'tis fixed in a Bone, he is with the Crow's-Bill Pincers to take hold of it and draw it out in a direct Line, lest he touch some Vessel or Nerve in pulling it: When the exotic Body is out, we dress the Wound the common way.

Extraction of the Point of a Sword.

Some Ages since there came out of Hell a Monster, in the Habit of a Monk, who trying Chymical Experiments, invented a Composition of Saltpeter and Sulphur, which we call Gun-powder. This diabolical Invention put Men upon making Fire-arms of all sorts; and not content with Pistols, Fusils and Musquets, which killed Men but one by one, they contrived the casting of Cannons, capable of murdering ten or twelve at once, and destroying and beating down the Ramparts which they had raised for their Security: And about a Year since there appear'd at Court another Monk, which thinking it too little to hew down ten with a Cannon Ball, believed it ought at least to kill thirty, for which Reason he came on purpose to produce a new Fabrick composed of three Cannons joined together, which should at once by that Means discharge three Bullets.

Invention of Gun-powder.

Fusils, Musquets and Carbines are charged with Balls of all sorts, forms and sizes, according to the Diameter of the Gun: These Leaden Bullets, when the Shot is discharged near, pass through the Body, an Arm or a Leg, at least unless they meet with some Bone which stops them. But when they come from a distance, they remain in the places of the Body which they have entred; in which case the Chirurgeon is to endeavour to get them out, for whilst these exotic Bodies remain in the Wound, 'tis not in his Power to cure it, because 'tis an Obstacle

Of Musquet-balls remaining in the Body.

cle to its Re-union, which is the End proposed in the Cure of all Wounds.

But this must not be taken literally, for I have known some cured though the Ball remained in the Wound; but that happens so rarely, that taking what most frequently occurs for a general Rule, we may venture to say, that all exotic Bodies remaining in a Wound, hinder its curing; and that we are to make use of all the Means with which Chirurgery furnishes us to get them out as soon as possible: For if we defer it, the Part swells, and 'twill cost us much more Pains than if we had taken it out a little time after the Patient had been wounded. Before then we dispose our first *Apparatus* we must draw out the exotic Body, at least unless we meet with great Difficulties, or the Chirurgeon at that time wants necessary Instruments.

The Chirurgeon to be inventive.

Chirurgery being thus succeeded by general Precepts, we shall next shew how these exotic Bodies are to be gotten out; to which end that Art has invented several sorts of Instruments. The Chirurgeon must be informed of them all; but especially those destin'd to the use of the Army, and more particularly at this time than any other, when daily Occasions present of practising this Operation, by reason of the numerous Battels and Sieges in which so many generous *French* Men expose their Lives for the Service and Glory of the King. But however, the Chirurgeon may be instructed in the Schools, he learns yet more in the Army, and he is frequently obliged to depend more on his Genius, than on what has been taught him; because there occurs so many different and extraordinary Wounds, that 'tis impossible for him to be guided by any thing but his own good Sense and Industry.

What the Chirurgeon is to inform himself of.

The first thing which the Chirurgeon is to do, is to inform himself of the distance betwixt the fighting Forces, in order to judge of the depth of the Ball; he is also to place the Patient in the same posture in which he was when he received the Wound, that he may convey in his Probe by the same way which the Ball made; he is then to turn his hand to the opposite side or part, to try whether he can't feel the Ball, for frequently after having crossed the Part, it stops at the Skin, barely pushing at it, not having Force enough left to pierce it. If we feel it on the opposite side to that at which it entred, with the Incision Knife C we are to make an Incision on the Ball proportionable to its size, and with the little Forceps D take it out. We give at the Mouth of the Wound two small cuts with the Incision Knife, the one above and the other below, to change its Figure into a long one, and run a Seton thro' the Wound, and then dress it after the usual manner.

If the Bullet is left remaining in the Flesh, and we feel it with the Probe, we are to begin the Operation with dilating the Wound, without which we cannot draw it out by the same

same way it entred. This Dilatation is also necessary to introduce the Instrument with which we are to draw it out. Of these Instruments there are several sorts, which we call Bullet-Extractors: Of which I here exhibit to you twelve different shapes, which I have caused to be engraven on the Plate at the beginning of this Demonstration.

The first is a *Dilator E*, which serves for two ends; the first of which, is to dilate and enlarge the Wound, as well to see what is at the bottom, as to make room for the Instrument to take hold of, and draw out the exotic Body with the greater Ease: Secondly, to make use of it as an Extractor to draw out the Ball, for the Chirurgeon may with that take hold of it, grasp it close, and guide it out without the help of any other Instrument; with this difference only that in the use of other Extractors, we are to close the two Branches out of the Wound, and in this to open them.

The second is the *Spoon-Extractor F*, so called from its being of that shape: This Instrument is provided with a handle, that it may be held the more steady; 'tis long, that it may reach the exotic Body, and having got the Ball in its Cavity, which is a little bent, we guide it out, so that we make it force its way without too much pressing it.

The third is the *Ring-Extractor G*, which has that Name from the end of it, which is to search for the Ball, being round and form'd like a Ring; 'tis that which holds the Ball, and draws it out with the same Facility with which it entred.

The fourth is the blunt *Crotchet-Extractor H*, which having gotten hold of the Ball, draws it out; 'tis long, that it may reach as deep as the Bullet, and provided with a handle to render it the more commodious.

The fifth is the *cleft Crotchet-Extractor I*, whose Points are blunt that they may not hurt the Parts: It may be used to draw and take hold of bits of the Shirt or Garments which the Balls almost always carry with them to the bottom of the Wound.

The sixth is an Instrument called the *Crow's Bill K*, whose Branches which enter the Wound in quest of this exotic Body are very long, that they may be used on all Occasions.

The seventh is named the *Crane's Bill L*, because it resembles it: It has a Spring to dilate it when 'tis entred into the Wound, that it may easily be charged with the Ball, and then draw it out.

The eighth is called the *Duck's or Broad-bill M*, whose Extremities are tooth'd, in order to hold the Ball fix'd and fast, that it may not slip out of them.

The ninth is the *Screw Duck's-Bill N*; the Screw so firmly closes the end on the Ball when 'tis charged with it, that it comes out with this Instrument.

Several Instruments for Extraction.

1. The Dilator.

2. The Spoon-Extractor.

3. Of the Ring-Extractor.

4. Of the blunt Crotchet.

5. Of the cleft Crotchet.

6. Of the Crow's Bill.

7. The Crane's Bill.

8. The Duck's Bill

9. The Screw Duck's Bill

10. *The Lizard's Mouth.*

The tenth is called the *Lizard's Mouth O*, from the Resemblance it bears to the head of that Animal: It opens only at the end, and that by Means of a Spring which we thrust forward, in order to that end, and draw it back to shut it: This Spring is contained in a hollow Pipe in the Body of the Instrument.

11. *The Alphonsine.*

The eleventh is an Instrument, to which we give the Name of the *Alphonsine P*, because invented by *Alfonso Ferier*, a *Neapolitan Physician*: 'Tis composed of three Branches, which are closed by Means of a Ring which holds them; this Instrument thus closed, is introduced in the Wound as deep as the Ball is, when by drawing the Ring towards the handle, the Branches separate and seize that exotic Body; having hold of which, we push the Ring forwards, which re-closing the three Branches, so shuts in the Ball that it cannot miss of coming out with the Instrument.

12. *The Piercer.*

The twelfth is the *Piercer* or *Levitor Q*, whose Point is a small Screw, which we force to enter the Ball by turning, by means of a Worm which guides it in the Pipe which runs thro' the whole length of the Instrument: This is particularly designed to be used to get out those Bullets which are stuck in the Bones, and is not proper to be employed on those remaining in the Flesh, because they must be fixed, or else the Screw cannot make any hole in the Bullet.

With regard to all these Instruments, we cannot lay down any Rules, which ought to be preferred; but they have all their particular Uses according to the different Parts from whence the Balls are to be drawn, the Chirurgeon is to chuse the most proper to his purpose, after having informed himself of the Nature of the exotic Body, and the Place where it is.

These Instruments not always sufficient.

Though the Art of Chirurgery has been fertile in the Production of Instruments, as appears by the numbers with which it presents us, there are yet some Cases left in which they afford us but small help: The Chirurgeon must then invent new ones, prepare Models for the Cutler to make them by, of such figure and size as they may be able to draw Bullets out of some places of the body where they are entred, for a Chirurgeon must not refuse, and alledge he has not such; in any case on this side of a downright Impossibility.

Necessity of a quick Extraction.

We are not only to undertake to draw out a Bullet, or any other exotic Body, but to do it with utmost Expedition: We find the Patient more submissive at the first, than the following Dressings; they then allow us to make all the Incisions which we find proper. I have, in the Army, seen Soldiers who not only never once cried Oh! but never moved their Eye-brows, what Pain soever we have put them to, in order to get out a Bullet or Splinter of a Granado, or by making Incisions on them: The Chirurgeon is to take the Advantage of this favourable

rable Disposition, because it frequently happens that on the Morrow, or another Day, he does not find the Patient much enclined to resign himself up to his Will.

A Delay may also prove prejudicial with regard to this Ease of taking out the Ball. For if immediately after the Wound we follow the Track of the Bullet, we may easily find it: But if the Patient has walk'd or stirr'd, it may have changed its Place; and if in an Arm or a Thigh, may be born down lower by its own weight, in which case we are to make larger Incisions, which may yet prove vain, when 'tis split into a Space betwixt two Muscles. *Danger of Delay.*

There is yet a third reason why the Chirurgeon is not allowed to retard this Operation, which is, that the first Day the Part not being yet swell'd we can the easier discover the exotic Body, and get it out without much pain: But when we stay 'till the Morrow, or another Day, we find the Part so tumefied by the Flux of Humours to it, that we can scarce follow the Tract which the Bullet has made, because its entrance is contracted, and the Flesh swell'd up, and if we cannot dispense with the making some Incisions, they prove then more painful than they would have done the first Dressing.

'Tis a mistake to believe that there are any Medicines which can possibly attract exotic Bodies: But yet some Authors assign two sorts; they tell us that there are some which act by a manifest, and others by an occult Quality; the first are Pitch, Galbanum, and several other Gums; the second, are Amber, the Loadstone, and several others. But a good Chirurgeon is not to expect any assistance from these Medicaments, but ought to depend more on his Instruments than all the Drugs in Pharmacy. *No Attractive Medicaments.*

Some Chirurgeons, without giving themselves much trouble, wait the expulsion of the Ball by the Symptoms which attend Gunshot Wounds, and pretend that they have done great Matters when they have laid on Leaven, Pigeons Dung, and other putrefying Ingredients which procure a great Suppuration, or an Abscess, that the Pus may bring along with it the Bullet, tracing the way which it ought to come out. But this Method seems to me dangerous, by reason that no Abscess is procured without violent Pains which occasion a Fever, and render the Cure tedious and difficult, and indeed not to be hoped for, unless we make Orifices to give issue to the Matter and exotic Body: Wherefore we are to avoid this Practice, which is follow'd only by timorous Chirurgeons, who are more afraid of making Incisions than the Patient of suffering them.

Sometimes when we have drawn out one Ball, our Work is not yet done, the Soldiers charge their Musquets frequently with two or three. I have seen some who having Balls of too large a Diameter have cut them into four pieces, all which they have clapp'd into their Fusils; for which reason we are to examine

Observa-
tion.

mine whether there are several before we Dress the Patient. A Swiss Officer was wounded at the Attack of the Cittadel of *Cambray* by a Musquet-shot, which he received in the forepart of the Thigh; the Chirurgeon feeling the Ball at the hind part, where it stuck, not having pierc'd the Skin, made a small Incision on it, and drew it out there, believing that there being but one entrance, there was but one Bullet, whereas there really were two; one of them meeting with the Thigh-Bone, did not penetrate so far as the other, but by little and little fell to the Bottom of the Thigh, and did not come out 'till six Months afterwards by an Abscess which it formed in the Knee.

All the Balls being taken out, there yet remains some exotic Bodies, which we must also get out; these are the bits of the Cloths or Shift which the Bullets carry before them to the bottom of the Wounds. In examining the Cloths of the wounded Patient, if we find a piece of the size and shape of the Ball, taken out by it, we may be sure 'tis in the Wound; wherefore we are to draw them out quickly, without which 'tis impossible to cure the Wound. As it happened to *Monfieur de Ponti*, who was wounded at the Siege of *Londonderry* by a Musquet-shot, which carried a bit of his Waistcoat with it into the Wound: The Ball being taken out, the Chirurgeon could not guess what retarded the Cure; the Wound formed from time to time several Abscesses, which exhausting that Gentleman's Strength, brought him to a very low and terrible lean Condition, when there arrived a *French* Chirurgeon, who made fresh Incisions, and drew out the piece of Stuff which occasioned all these Mischiefs, and cured the Patient in a little time.

In charging the Fusil, the Soldiers clap in after the Powder a Pellet or Stopple of Paper, and the Ball over that. In a Shot received from a small distance, the Bullet may run through the Part, and the Paper Stopple which followed it remain in the Wound; this is a Circumstance which requires the Chirurgeon's Attention, because it very frequently happens, and 'tis impossible to cure the Wound whilst his exotic Body remains in it, we must not only take out whatever came from without, but also the Splinters of Bones, which, when they are separated, prick the Flesh, occasion Pain, disturb the Wound, and hinder its reunion.

The Hæ-
morrhage
rare in
Gun shot
Wounds.

From Fire-wounds there issues out but little Blood, and they are but seldom attended with an *Hæmorrhage*, because the Ball burning whatever it touches, occasions a Scar, which hinders the Blood from running out, though some Vessels should happen to be touched; but the Scar coming to fall off, there sometimes happen *Hæmorrhages*, which occasion the Death of the Patient, if not very quickly stopped by the Chirurgeon; wherefore he is to be upon his Guard, and promise nothing abso-

lutely

lutely before the Scars are intirely separated, they being (when near the great Vessels) of dangerous Consequence.

The Flux and Settlements of Humours on the Part wound. *Settle-*
ed by Fire-arms, are always greater than in those made by Cut- *ments of*
ting-weapons. These last barely cutting and separating the *Humours*
Parts; but the others breaking and lacerating the Fibres of a *great in*
Muscle, occasion a violent Suction which forces the Humours *this Case.*
to fall on the Wound, and form Abscesses, which render the
Cure very difficult. We are not then to pretend to cure a
Musquet-shot so soon as a Thrust with the Sword, and we are
to be more attentive, with regard to the supervening Symptoms,
which are always very mischievous.

If a Ball be stuck into a Bone, we are to try to get it out *Extraction*
with the Levitor, or Piercer; but if it be so strongly fixed in *of a Ball*
it, that we cannot get it out, we are rather to leave it there, *stuck into a*
than to torment the Patient by too violent Efforts; we are then *Bone.*
to wait the *Exfoliation* of the Bone, because when that part of
it which has been hurt comes to separate, 'twill certainly carry
the Ball along with it.

If the Bone happen to be in a perpendicular Situation when *Of Bul-*
hit by a Ball, 'twill stop the Shot; but if it be inclining either *lets gra-*
way, the Bullet will graze along it, and ascend or descend ac- *zing along*
cording to the Inclination of the Bone when it reaches it; of *the Bones.*
this we have seen two fatal Examples, one of them happened
to the Prince of Rohan, who was wounded on the Knee, and
the Ball mounted along the *Femur*, or Thigh-bone; the other
to Monsieur de St. Mars, who being shot on the Foot, the Bul-
let ascended along the *Tibia*: They both died, and notwith-
standing the utmost Care of the Chirurgeons to prevent it, the
Cause was imputed to them, for not searching the Balls in
those Places where they were found after their Death.

Those whose Skull is touch'd by a Ball, are affected with a *Of a Shot*
Perturbation or Consternation of the Brain; and the number *on the*
of those which die is greater than that of those which escape, *Head.*
because that Commotion continually occasions the extravasating
of the Blood of the little Veins, which in this part are very
tender: Nothing but the Trepan can give issue to this Blood,
and consequently can prevent the Patient's Death: Wherefore
though the Skull happen to be but a little touch'd and un-
covered by the Ball, it must be trepanned; and though I tell
you that these Wounds are very dangerous, we have yet In-
stances of several which have been cured.

There are also terrible Mischiefs occasioned by the Splinters
and pieces of Bombs and Granadoes, they killing or wounding
all those which they hit. I shall not treat of the Splinters or
pieces of Bombs, because those which are wounded by them
have no need of dressing, Death following so close at the Heels
of those Wounds, that Chirurgery cannot avail them at all.
But as for those of Granadoes, I have dressed many, and taken

out Splinters which fixed in all parts of the Body, except the Head, of which all that are hit dye, by reason of the great ravage they make of the *Cranium*, and the shock they give to the Brain, which remains dos'd and stupid, as if it had been beaten with a Club.

The Granado bursting breaks into several Bits, the Splinters of which enter the Flesh more or less, according as they are little or great, or the Patient was far distant, or near the Place of its bursting. At the Siege of *Cambray* I took out one as big as the Palm of my Hand, which was entred so far into the Buttock of an Officer, that we could not see it. Monsieur *Bessiere* told me he saw one that had placed it self in the *Scrotum*; but, in short, in what part soever it is, the Patient must be delivered from it as soon as possible; which Operation requires Incisions which we cannot here describe, and which the Chirurgeon is to make according to the situation of the Wound, and the nature of the Exotic Body.

Of Cannon
Bullets.

We don't rank Cannon Bullets amongst the number of Exotic Bodies to be extracted, they send all those to the Grave whom they touch, and have yet left us no example of their remaining in any Person's Body, and that he had any occasion for a Chirurgeon; 'tis a sort of Happiness to those which meet with them in their way, when they take off only a Leg or an Arm; we have spoken of this sort of Wounds under the Head of Amputation.

Precaution
in Dressing.

The Ball, or other exotic Body, being drawn out, before we dress the Wound, we are to have regard to three Circumstances, which are: First, To alter the round Figure of the Wound into a long one, by two Cuts of the Incision Knife R, one upwards, and the other downwards, according to the rectitude of the Fibres of the Muscles: Secondly, To make an Issue to the Wound, by enlarging it below, that the *Pus* may easily run out, and that we may not afterwards be forced to do it; and thirdly, to run the Needle S, threaded with the Seton T, into the Wound, if it goes thro' the part, in order to reserve a way to convey Remedies to it.

Gunshot
Water.

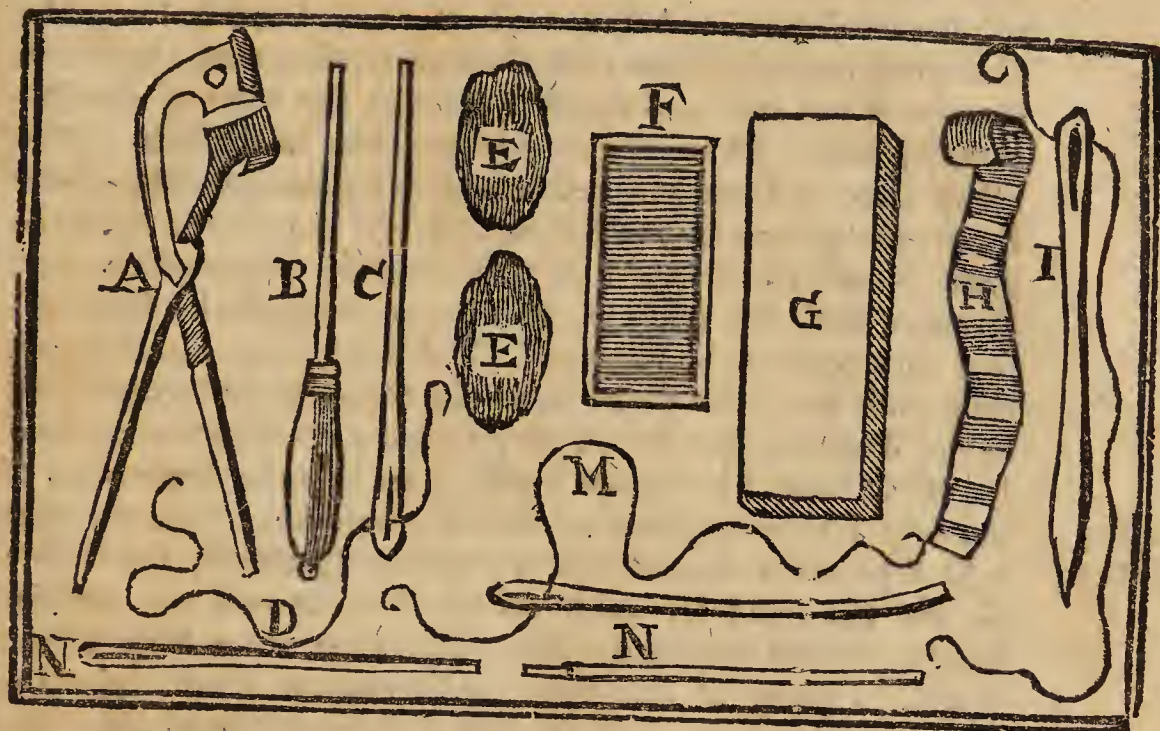
In the beginning we make use of a Digestive to help the separation of the Scars; but it must be more quicken'd, and not so putrifying as those in Contusions, that we don't thereby procure too great a Suppuration. When the Scars are fallen off, we suppress the Digestive; endeavour to dry up the Wound with the Vulnerary Water, which is excellent in these sorts of Wounds, and is for that reason call'd Gunshot Water.

Dressing of
the Wound.

The Chirurgeon puts the Linten Tent V, into the Wound when necessity requires it, but does not make use of it at all when he has run a Seton thro' it: He lays on the Wound the flat Pledget X, cover'd with some Digestive, then the Plaster Y, and the Bolster Z, moisten'd in Brandy, or Aromatic Wine,

Wine, and ends with the uniting Bandage *a*, made of the Band *b*, roll'd at both ends, we then continue the Dressing as directed by the Art of Chirurgery.

FIGURE LIII. For the Application of the
S E T O N.



THE Seton is a Chirurgical Operation which makes two holes in the Skin by means of a great threaded Needle: This Name of Seton is deriv'd from the Word *Seta*, a Hogs Bristle, by reason the first Chirurgeons made use of them to run them thro' both the Orifices made with the Needle.

Those who succeeded the Inventors of this Operation, pretend to have succeeded better with Horse-hair, because longer and more commodious; and their Successors have wholly laid aside the use of any Hair, alledging, that it was too hard in the Wound, and did not sufficiently facilitate the Filtration of the Humours, which is the end propos'd; wherefore they substituted a Cotton-wick, as softer, and more proper for the execution of that Intention. And lastly, other Chirurgeons have condemn'd that, urging that it has small Points which incessantly pricking the Wound, fatigue and incommode it, and will have us make use of Flaxen Thread undress'd, which has never pass'd thro' the Lye.

Various ways of applying Setons.

The Seton may be apply'd in all Parts of the Body; but that where our Predecessors apply'd them was the Nape of the Neck, from which Operation they expected considerable Effects: They believ'd it excellent in *Epilepsies*, *Hydrocephali*, all sorts of Fluxions of Humours on all the parts of the Face, and

Places where to be apply'd.

Fabricius Hildanus tells us, that he has done Cures with it that might pass for Miracles.

Old way of
piercing the
Skin for the
Seton.

The Ancients made use of a red hot Iron to pierce the Skin, which they thus managed : They caused the Patient to sit on a Stool without a back, and lean his Head a little backwards, that they might pinch up the Skin of the Neck, which he fixed betwixt the two Plates of the Forceps A, made in form of a Water-mold, or Iron, and pierced through, in order to admit the Needle; and thus with the Left-hand holding the Skin close in these Pincers, in their right they took the actual Cautey B red hot, and thrust it through the holes of the Pincers, by which Means they made two holes in the Skin. The actual Cautey having made these holes big enough, they drew it out, and giving it to a Servant, in the same hand took the great Needle C, shaped like that used by Shoemakers, and threaded with the Wick D, and run it through the holes before they opened the Forceps. The Wick thus run through, they took away the Pincers and the Needle, leaving the Wick in the Wounds, into which they soak'd a Medicament composed of Oil and the Yolk of an Egg, to help the Separation of the Scars; they then laid on these Orifices one of the Pledgets E E, dipt in the same Remedy, then the Plaister F, the Bolster G, and the Band H, with which they formed the circular Bandage about the Head, they daily drew out a little of the Wick, in order to convey the Medicament afresh into the Wounds; after the fall of the Scars, they continued the changing of the place of the Cotton-wick, and when 'twas all used up, they fastened another to its end to renew it, and this they continued as long as they judged the Distillation of Humours necessary for the cure of the Diseases which had obliged their Application.

Dressing
the Wound.

Uselessness
of these Se-
tons.

'Twas a Controversie betwixt the Favourers of this Operation, whether the Skin was to be pinch'd longways or across, that is, whether the two holes were to be from one side to the other, or one above the other; which is of so little Consequence, that it does not deserve our stopping at it, and the rather because this Operation is not practised at present. When there is a Necessity to provide an Issue for those Humours which occasion all the Diseases of the Head, we lay on a caustic Stone on the *Fossula* of the Neck, and by that Means give them Issue, and they filtrate incessantly, which cures these Diseases as well as a Seton.

The *Italians* have been great Lovers of this Operation, but they seem at present to be much come off from that Opinion; for being in *Italy*, I met with several who laid Caustics to the Arm. The Seton is not only cruel in its Application, but very troublesome in its Consequences: The Caustic does not require so many Preparatives, it gives less Pain in laying on, we dress it more commodiously, and receive the same Advantages from it;

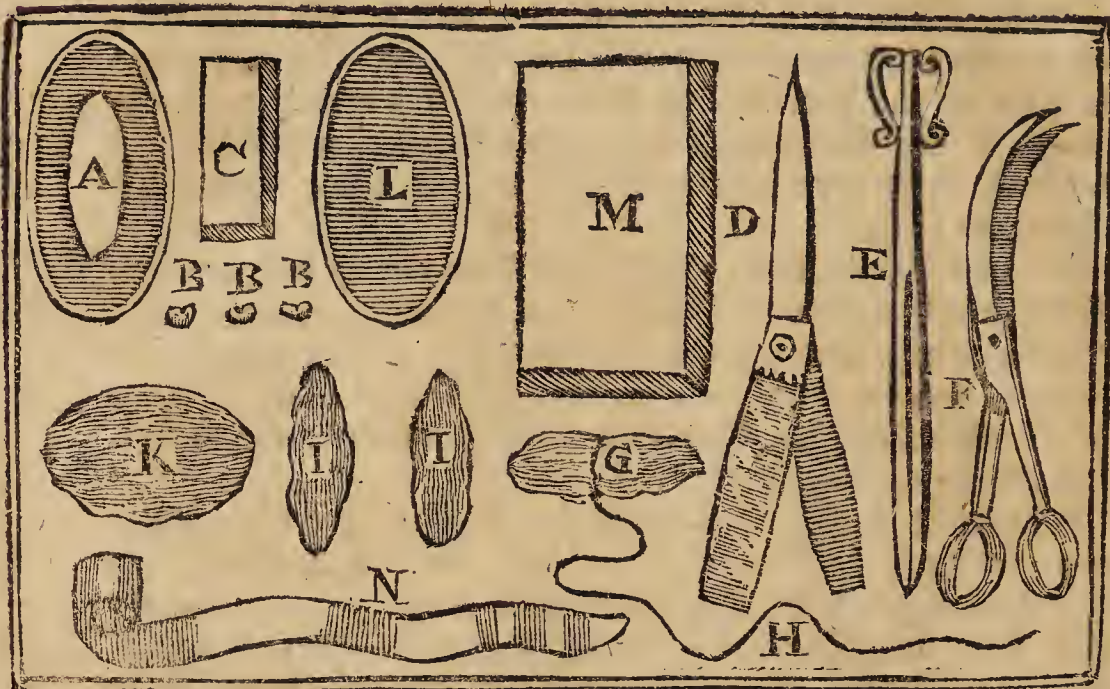
it ; 'tis not then without Reason that the *Italians* and the *French* have substituted it in the Place of the Seton.

To conclude, if any one is so prepossessed in favour of Setons, that he will prefer it to the Caustic, and will have it applied, I advise the Chirurgeon then not to make use of either the Pincers, nor the red hot Iron; but only of the large Cutting-needle I, threaded with the Lace K, and run it through the Skin of the Nape of the Neck, pinching it only with the Fingers of his Left-hand: Thus this Operation is done in a Moment, there are no Scars to fall, and the same Advantages result from it.

We understand also by this Word *Seton* a very little narrow *Use of the Linnen-band, which, by the help of a Needle, we run thro' little Band.* Wounds which have an Entrance and Exit: I have just now hinted to you, that they are to be run through the Wounds, out of which we have extracted Balls or other exotic Bodies, through the opposite Part.

We take then the Seton-needle L, blunt at the end, that it may not hurt, and threaded with the narrow Band or Tape M, which we run through the Wound from part to part, imbibed with such Remedy as we think proper: There is also another and longer Needle composed of two pieces N N, to render it more portable; they are to be joined together by a small Screw: This is used in Wounds which run through the Thighs; the Seton placed, we take out the Needle, and continue the dressing as above directed.

FIGURE LIV. For the OPENING of an ABSCESS.



THE Aperture of an Abscess is called *Onchotomie*, which is derived from the two Greek Words, *Onchos*, which signifies a Mass or gathering of Matter, and *Temnein* to cut; so that this Operation consists in the making an Incision in the Place where Matter is gathered.

The most frequent Operation.

'Tis the Operation which the Chirurgeon most frequently performs, occasions of opening Tumours or Abscesses continually offering. I shall not enter into the particular Causes of unnatural Tumours, supposing the Chirurgeon to have read what so many celebrated Authors have said on that Head, and that he is informed of whatever regards them in general, and the proper Remedies to dissipate them by way of Resolution. I shall only confine my self to what is to be done, when they cannot be cured by way of Suppuration.

Examination of it.

When a Chirurgeon undertakes the Cure of a Tumour which is to end in a Suppuration, he must examine very well the Signs which express the Condition in which it is, some shew that Matter is forming, and others that 'tis formed.

Signs of Matter forming.

Those which shew that 'tis forming or gathering, are a Tumour, Pain, and a redness of the Part, the Patient feels a shooting in the Tumour, his Rest is broken, and he has a Fever. *Hippocrates* tells us, that whenever Matter gathers, Pains and a Fever supervene. If the Chirurgeon, on feeling the Tumour, finds there is no Fluctuation, 'tis a sign that the Matter is not yet digested; in which case it must be helped on by ripening and putrifying Medicaments: If the Tumour is small, the Chirurgeon

surgeon contents himself with laying a Plaister of *Diachylon cum Gummis* with a little *Basilicon*; but if great, hard, and far from Coction, he is to make use of stronger Remedies, as Sorrel, Roots of Lillies and Marshmallows, Leaven and Pigeon's Dung, all of them boil'd in Pork Fat.

The Signs which shew that Matter is form'd, are the decrea- *Signs of*
sing of the Tension, Redness and Pain; the Tumour rises a lit- *Matter*
tle to a Point, and seems to mark out the Place where the *form'd into*
Matter pushes to come out: By putting our two Fore-Fingers on *Pus*
it, and resting them there alternatively, we feel the Matter
float in the Tumour, which is an undoubted Sign that it is
ripe, and that it ought to be immediately opened.

Able Practitioners propose to us two ways of opening the
Abscess, either with caustic Stones, or the Lancet, both of
them are equally good, but in some Tumours the first is ne-
cessary, and in others the Lancet is preferable: Which I shall
shew you in few Words.

When the Tumour is composed of cold Humours, and has *In what*
ripened but slowly, we are to defer the opening as long as we *case the O-*
can; we run no risque by staying, for the Matter being form'd *peration is*
from cold and gentle Humours, cannot occasion those Scars, *to be re-*
nor the same Inconveniencies which would attend that of a *tarded.*
hot Humour. Besides, should we open these sorts of Tu-
mours as soon as we feel the Fluctuation in the middle, there
would remain a hardness, which we should find difficult to
mollifie afterwards; wherefore the Operation is to be retarded
'till the whole is in a proper condition to be evacuated, because
the Matter produces Matter, and that already cocted, helps to
digest the rest; which done, the Chirurgeon is to lay over the
whole length of the Tumour, a whole Train of Caustics, for
two Reasons: The first, because the heat of these Caustics *Where Cau-*
compleats the Coction of the Humour; and the second, be- *tery is use-*
cause the Scars being fallen off, leave an Orifice large enough *ful.*
to convey in the Remedies proper to dissolve and consume the
Hardness, which could not be softned by Suppuration. When
Abscesses are deep, we must also make use of caustic Stones,
because they make a larger Orifice than the Lancet, and there-
by facilitate the Conveyance of Remedies to all the Parts of the
Cavity of the Abscess.

But when the Tumour ripens quick, and by its softness we
discern the Matter to be perfectly digested, we are not to stay
for its eating through the Skin, in order to issue out of it self;
for by its continuance within, it may occasion some ill Effects,
by corroding the Fibres of the Flesh, which are more tender
than those of the Skin; we are then, without delay, to make
use of the Lancet, making an Orifice large enough to evacu-
ate all the Pus contained in the Tumour.

Of an Incision Knife set in a Ring.

Some Authors have invented a Ring, in which they fix a small Incision Knife, which they make use of to open Abscesses in timorous Children, and such Persons as cannot be prevailed on to endure what they think proper to do to them: They put this Ring on one of their Fingers, and on Pretence of feeling the Tumour, pierce it with the Incision Knife, and so dextrously deceive their Patients. But this Procedure seems to me to favour a little of the Mountebank; wherefore I can't advise you ever to make use of it. If this Operation is to be performed on a Child, it need only be held fast; and if any grown Person prove rank Coward enough not to suffer it, the Chirurgeon is to quit and abandon him to his Fate, without being at the trouble of searching after Stratagems to surprize him.

How the Cautey is to be apply'd.

If we have resolved to make use of the Cautey, we take the Plaister A, which is slit the length of the intended Orifice; this we lay on the middle of the Tumour; we then lay two or three of the caustic Stones BBB in the slit of the Plaister, and over them the small long Bolster C, which is wetted, the sooner to dissolve the Stones: Then we lay on a second Plaister, which we cover with a Bolster, and with a Band fasten on the Dressing. We let these Caustics work for two or three hours; but if we would have them eat deep, we leave them on longer. After having taken off the whole, with a Lancet we make an Incision on the middle of the Scar, deep enough to reach the Matter, which we suffer to run out as much as it will, and as is in the Tumour; for the World is disabus'd, with regard to the Mistake of the Ancients, who fear'd the weakening their Patients, by evacuating an Abscess all at once; whereas we find on the contrary, that the more we force the Matter out, the more they are eas'd, especially when the Pus is perfectly form'd. Experience in Hydropics also destroys their Notion, they would not have us draw off the Water at less than four or five times, alledging that we ought not to proceed from an extream Repletion to an extream Inanition: And at present we empty them to the last drop, without their discovering any sign of Weakness; and we see them come to the Chirurgeon to have the Puncture made, and afterwards return home with the same Vigour which they came thither, (supposing they before were strong enough to come of themselves) for in most Dropsies the Patients frequently wait the last Extremity, before they resolve to undergo the Operation.

Evacuate the Tumour all at once.

Method of opening it with a Lancet.

If we fix on opening the Tumour with a Lancet, we are to take that marked D, which is longer and broader than those used in bleeding, whence 'tis called the Abscess Lancet. Having open'd and half folded it, we take it in our Mouth, examine the place where the Matter is, and having observed it, with the Thumb and fore-Finger of the Left-hand we extend the

the Skin, that it may not vacillate in the time of the Operation, and with the Right take the Lancet and strike it in as far as the Matter; then raising it up, in the Elevation we sufficiently enlarge the Orifice, to give issue to the Pus, which we see immediately issue out, and which we receive in a Porenger or some other Vessel ready prepared for that end; we press the Tumour a little on each side in order to discharge it. Having judged by the quantity of Matter come out, that there must remain a great vacuity, with the hollow Probe E, which we introduce into the Wound, we endeavour to discover on what side the vacuity is largest, and with the crooked Scissars F we open the empty side, and particularly when it happened to be undermost; so that this hollow Probe serves two ends, one to inform us of the size and nature of the Cavity, and the other to guide the Points of the Scissars which are to dilate it. Some Chirurgeons which don't overmuch affect neatness, after the first Aperture with the Lancet convey their Finger into the Abscess to explore its breadth and depth; and if it be found necessary by any Incision to enlarge the Orifice, their Finger performing the Office of the Probe, serves as a Guide to the Points of the Scissars.

These sorts of Apertures require three Circumstances, which are very essential: The first is, that they be made according to the rectitude of the Fibres of the Muscles, along by, and not across them, for fear of laming the Patient; the second is, to make them always on the declining or undermost part, that if there remain any Purses of Matter they may issue out of themselves; and thirdly, to make them large enough on the first Day, as well to avoid the being forced to make fresh Incisions afterwards, as for the more easie conveyance of the Remedies to all the Parts of the Cavity of the Abscess.

The Orifice being as I have hinted, and the Matter evacuated, we Dress the Patient: We make use of nothing else at the first Dressing but dry Lint, the better to imbibe the remainder of the Pus; of this we make two Stopples in bulk proportion'd to the size of the Cavity: That which we thrust to the bottom, mark'd H, is to be provided with a Thread, that when we Dress the Patient again, we may be secure that after having taken that out there remains no more in the Wound: Having after that apply'd the two other I I, we cover them with the flat Pledget K, and the Plaister L, cover'd with Diachylon, in order to dissolve the remainder of the hardened Humour, and above that the Bolster M, and lastly the Band N, roll'd circularly several times to keep on the Apparatus.

On the Morrow we cover the Stopples with *mundicative Unguents*, as those *Hippocelins*, or *Apostolorum*, with which we mix a little *Ægyptiacum*, if there be any putrid Flesh which we would consume. We labour to deterge and cleanse the whole bottom of the Abscess, which we then leave to fill up with

Circumstances to be observed.

Of the Dressing.

with Flesh: Being sufficiently Incarnated, we make use of De-ficcatives in order to bring it duly to Cicatrize, which is the end propos'd from the beginning.

The Abscesses which come on the Face prove not a little troublesome to the Chirurgeon, because he finds himself under a Necessity of making Incisions there, to give issue to the Matter, which leaving Scars, occasions the disfiguring of the Part. The Chirurgeons labour'd under this perplexity in the case of the Duke of *Berry*, who on the 3d of *October*, in 1706, return'd from Hunting with his right Cheek very much swell'd; they bled him, and laid on Cataplasms to try to dissolve the Humour which occasion'd this Tumefaction. They bled him a second time, but the Tumour which proceeded from an infinity of Contusions occasion'd by the resting of the Fusil against that part, resisted all Remedies, they found it proceeding towards Suppuration, by its Redness, the augmentation of the Pain, the small share of Rest which it allow'd him, and the Inflation of the Eye, Nose and Lips: And indeed the Duke for three Months before this had been so often out a Hunting, each of which times he had receiv'd four or five hundred Blows with the Fusil, and had brought back with him two hundred and fifty Pieces of wild Game, that his Cheek was so mortified, that there was little hope left of its resolving. On *Tuesday* the 12th of *March* Mr. *Maréchal* felt a Fluctuation in the Tumour, and having made me feel it, the necessity of opening it, and the Place where the Orifice was to be made was agreed on, the Hour pitch'd on was at two Afternoon, when the Duke being placed in an Elbow-Chair, that being the most convenient Posture, whilst I held his Head, Mr. *Maréchal*, in the Presence and with the Advice of Monsieur *Fagon*, struck the Lancet into the lowest part of the Tumour, and raising that Instrument open'd it a Pin's length: The Pus immediately issued out, in quantity enough to have filled a large Egg-shell. Mr. *Maréchal* thrust one of his Fingers into the Wound, and felt round the Cavity of the Tumour, to discover whether the Bones were uncovered, and having found the *Periosteum* fixed on the Bones of the Pommetre and Upper-Jaw, he dress'd it. The Dressing was afterwards continued on with the Injection of Deterfives which cleans'd the bottom of the Abscess, which fill'd up with sound Flesh in very little time; for in twenty Days that Prince was perfectly cured, and the Orifice being made as small as possible, and as near the Ear as the Tumour would permit, there remain'd but a little long Scar, which will be hid by the edge of the Peruke.

Of the Carbuncle and Anthrax.

The Carbuncle, vulgarly called the *Cole*, is so term'd, by reason the Patient feels a burning Pain, and that the Effects which follow it are like those which we feel when we have laid a burning Coal on any part. Most Authors confound the Carbuncle with the *Anthrax*, alledging, that both of them re-

sult

suit from an atrobitious and boiling Blood, and that they differ only in Degree and Circumstances; and that, according to the Version of the Greek word *Anthrax*, it signifies a *Carbuncle* or a *Coal*: But yet, by the Description I am going to make, you will find that they are to be referred to two different kinds of Tumours, which require different Remedies and Operations in order to their Cure.

The *Carbuncle* is defin'd to be an ashy black Pustule, attend- Definition
ed with Redness and Pain, Heat and Inflammation about it, of a Car-
which raises it to a Bladder or Blister that burns the place where buncle.
it is, and which when it bursts leaves a Scar of the same sort
with those which remain after Cauterising, and Burns.

There are two sorts of them; the one *Simple* and *Benign*, Its Species.
caused by the acrimonious Serosity of an atrabilious and boil-
ing Blood, which makes an impression on the Skin through
which it passes, and which gathering under the *Epidermis*,
there produces a great Pustule like that occasion'd by Burns:
The other is *Malignant* and *Pestilential*, and results from a
burning Serosity like *Aquafortis*, which forms a deeper Scar
than the former; it happens in Pestilential Times, and is always
Mortal.

I shall not treat of General Remedies, the ordering of them Opening of
falls under the Physicians Province, nor what is to be done in the Pustule.
case of the *Pestilential Carbuncle*, which we are to look for in
those Authors which have wrote of the *Pest*, who have suffi-
ciently inform'd us on that Head: But shall confine my self to
the Method of handling Chirurgically those *Carbuncles* which
are curable.

If the Pustule is not open, it must be immediately open'd, that The Aqua-
the serous Matter may have time by a long continuance to Phagadæ-
make a stronger impression on the Skin, we are then with a nica.
Lancet to make Scarifications to the quick, on all of the Car-
buncle which is lived and black: Whilst the Blood and serous
Humours issue out, we are to dissolve a little *Theriaca* in Spirit
of Wine, and in that Dissolution soak a Pledget, with which
we are to cover the Scarifications which we have been mak-
ing, and this Dressing is to be renewed from six hours to six
hours, withal bleeding the Patient: If he is replete and robust,
we are to reiterate the bleeding several times, oblige him to
take Cordials, and observe a strict Diet.

On the Morrow, if the Patient does not feel any Pain in the
Part, and we find the Blackness increase, we are to redouble
our Scarifications, and make them so deep that he may prove
very sensible of them, and apply to them the *Aqua Phaga-*
denica, which we call yellow Water, compos'd of Lime-water
and Sublimate; this is a potent Remedy against Mortification.
Monsieur de Lulli, that great Physician, died of a like Pustule
on one of his Toes.

Sign of natural Heat in the Part.

But if in the Circumference of the black part we discern a little Circle, 'tis a sign that the natural heat remains in the Part, and that the Scar will separate: We are then to procure this separation by unctuous Remedies, but such as are always animated and quicken'd, for fear of too great Suppuration. The Scar being fallen off, we are to cleanse, incarnate and cicatrize it; but above all, after the Cure, we are to purge the Patient very well, to carry off this burning Serosity, and by that means prevent a Relapse.

Of the Anthrax.

The *Anthrax*, or *Antrakion*, is a Tumour in the Flesh caused by a burning Humour, which swells and drives it out as though it were a *Granado* or *Bomb* ready to burst.

Its Etymology.

The word *Anthrax* is derived from two other Greek ones, *anea*, high, and *thorein*, to spring, intimating that the Tumour produced by it being full of inflamed Liquors, forms a scorching rising like a Mountain, which is ready to vomit Fire, Flames, and the Matter which it contains.

Effects of the Humour which forms it.

The Tumours which proceed from Abscesses, generally make but one hole, through which they give themselves an issue, when time is allow'd them; but that which produces the *Anthrax* is so corrosive, that it eats several through which to escape: I have seen some have seven or eight: It is so hot, that it burns all the Flesh which it soaks into; wherefore we are not to be surpris'd if the Patients never sleep, if they grow impatient, and are continually crying out, for of all Tumours this is unquestionably the most painful.

Places where it grows.

This Indisposition may happen to any of the Parts of the Body. When it fixes near the tendinous or membranous Parts, 'tis more painful than in the musculous; and if it falls on the Neck, it causes it self to be more felt than any where else, which I have seen verified in three Persons belonging to the Court which I dress'd and cured; one of them was Monsieur de *Chamarante*, principal Steward to the *Dauphiness*; the second, the Chevalier *Dudicour*; and the last Monsieur *Duchêne*, principal Ordinary of the King's Cup. These three *Anthraxes* were at the hind part of the Neck, near the Basis of the *Cranium*, where it not being possible for them to extend far, they caused an insupportable Tension.

Conduct of the Operation.

The first Days, the Tumour being hard, red, and driven outwards, I laid on Maturatives, but the Matter not staying for their Operation, burst out through several holes which it made in the Skin: All these Holes I cut into one, and continued by cross Incisions to uncover all this burnt Flesh, and make way for it to come out in great clusters, as it did daily, and continued to do, 'till it loosen'd and fell off by bits: As soon as these Incisions were made, the pain was not so great, and it diminished in proportion to the Separation: The Scars being fallen off, there remained a Cavity big enough to hold an Egg, which

I allow'd to fill up with Flesh; and finish'd the Cure as in other Abscesses.

We have a memorable Instance of this Indisposition in the Person of the King, who had an *Anthrax* at the same place in the Year 1697; and as in Persons of that high Rank, Chirurgeons endeavour to be sparing of Incisions in this case, it was deferred as long as possible, but the Clusters which loosened themselves from the bottom could not get out at the little Holes which the most subtil Part of the Matter had made; wherefore the Chirurgeons were obliged to make Incisions, which succeeded very well. I relate these Facts only to shew that an *Anthrax* cannot be cured without Incision.

FIGURE

FIGURE LV. For ENKYSTATED or TUNICATED TUMOURS.



THE *Enkystated* Tumours are those whose Matter is enclosed in a small Bladder or Membrane which we call by the Greek Name *Kystis*, which signifies a *Bladder*; which being derived from *Kyin*, a Greek Verb, which imports to *hide*; hinting that this little Bladder hides from us the Matter which it contains.

Various
sorts of
Wolves.

These Tumours are known to us by the Name of *Wolves*, of which there are three sorts, most of which have had Names given them drawn from Greek words which signify the thing to which their subject Matter refers. When they happen to the
tendinous

tendinous Parts, as the Hand, the Wrist, and the Feet, we call them *Ganglions*; and when they are filled with a Matter of the Nature of Pulse or Pap, they are term'd *Atheroma*: When they contain a Tumour resembling Honey, we give them the Name of *Meliceris*: When their Matter is more solid, and has the consistence of Tallow, they are called *Steatoma*, and when they are hard, and assume the shape of a Gland, they are looked on as *hardened Glands*.

Some Authors affirm that the *Kystis* which encloses these various Matters is formed by the Dilatation of some Lymphatic Vessel, where the Lympha coagulating turns to various sorts of Matter, according to its different mixture with other Liquors: But there is more probability that the Principle of these Tumours is a small Gland, because the Action of the Glands being incessantly to filtrate some Humour, if there happen to be any obstruction in the excretory Vessel, the Humour is then obliged to remain in the Gland; and by the swelling of it, force the Membrane of it to extend and form the *Kystis* of which we have been speaking. Experience confirms this Opinion; for if we make an Incision on one of these Tumours, and after having voided the Matter, we don't consume the Membrane which contained it, there filtrates into it a fresh Humour, which in time produces a new Wolf.

These five mentioned sorts of Tumours are not at all painful, by reason that the Matter which composes them, is of a gentle and benign Nature; and being neither hot nor pungent, does not occasion any Inflammation or Itching; which are the reasons why they may be supported during a whole Life, without the Patients being incommoded by them, if they don't grow excessive big, or are not situated in some place where they obstruct some natural Motion. Yet most of those People who have them, are uneasy and impatient to see themselves under this light Deformity, from which they will at any rate be delivered, and to that end apply to the Chirurgeon.

Chirurgery presents us with four ways of curing these Tumours; the first is by *Resolution*, and dissipating them; the second by *Suppuration*, and opening them; the third by *Ligature*, when their Basis is narrow; and the fourth by *Extirpation*.

Resolution is the most gentle and best way of dissipating these Tumours, when the Humour will yield to Remedies; wherefore, before we proceed to any others, that is first to be tried. We apply emollient and resolvent Cataplasms and Fomentations, prepared with Marsh-mallows, Wormwood, Mugwort, Sage and Juniper-berries: If the Tumour is very hard, we make Liniments with the Oils of Lillies, Camomile, Sail, Earthworms or Elder: We lay on Hemlock, Laudanum, Soap, Frogs with Mercury, the Divine or Diabolonum Plaisters, the last of which is composed of the most resolvent Plants in being, and invented by Monsieur *Blondel*, a Famous Physician of the Faculty of *Paris*, and to be had

of Mr. *Baldue*, Apothecary in the *Butchers-street* in the *Faux-burg St. Germain*, 'tis an excellent Remedy for the Dissolution of these Tumours. Some will have us press them with our Fingers, or beat them frequently with a little Palate, in order to break the *Kystis*, as also that we lay on them a small leaden Plate rubb'd with *Mercury*, and with a Bandage bind them as hard as we can.

*Of the Sup-
puration.*

In proposing Suppuration as a way to cure these Wolves, 'tis not to be expected that we are to understand such an one as Tumours form'd from hot Humours are brought to, they converting themselves into a proper well digested Pus: We mean only, that after having with the Lancet A open'd the Wolf, and evacuated the Humour, we cause the *Kystus* to fall out by Suppuration, without which the Cure would be imperfect, we cover the Pledget B with Remedies proper to consume it; and if the Orifice prove too small, we enlarge it with the Incision Knife C, or the Scissars D, chusing which of these two is most commodious.

There was at *Paris* one Monsieur *Gervasi*, who was in Reputation for curing all sorts of Wolves with a Caustic Remedy which he laid on the Tumour: He opened the Skin, if the contain'd Matter was fluid, and the *Kystis* was open'd by the Remedy, he evacuated the Humour, and consum'd the Membrane as all others do; if it was a *Ganglion*, or harden'd Gland, with his Remedy he extirpated it by slow degrees, and made it fall like an empty Nut-shell. In short, applying himself only to these Diseases, he cured a greater number than the other Chirurgeons, and consequently had more Experience in them.

*Of the Hair
and Thread
Ligature.*

When a Wolf has a narrow Basis, and hangs like a Pearl to an Ear, the Ligature is a sure way of making it fall off. Some Authors will have us to this end make use of a Horse-hair, alledging that it cuts it in a short time; but we tie it closer with the Flax Thread E, with which we bind the Skin of the Basis of the Tumour, which we thus force to fall off by Mortification. 'Twou'd be sooner done to take it clear off at one Cut with the Penknife F, as I have done to several Persons who have had it on their Head, and other Parts of the Body; the Patient is rid of it at the expence of a moments Pain, whilst the Ligature is several Days doing the same Work; but Women and tender People always prefer the Incision.

*Of Extir-
pation by
Incision.*

The fourth way is Extirpation, which is to be practis'd when emollient and resolvent Medicines prove insufficient, especially when the Basis of the Tumour is large, and it is sunk into, or fix'd in the Flesh. This Operation consists only in the making an Incision longways if the Tumour is long and narrow, or crossways if big and round. We make use of a Penknife F, to make these Incisions on the Skin which covers the Tumour, and with the two Instruments G G, we separate the Lips of the Wound, in order to grasp the Tumour betwixt the

the Forceps H, that we may separate and dissect it with the Myrtle Leaf I, which has a Tooth-pick at one end to make use of if occasion offer. If the Fibres, which fasten and fix the Tumour, happen to be so hard that the Tooth pick or Myrtle Leaf cannot cut them, we make use of the Pen-knife K for that end, taking care that we don't open the *Kystis*, the Chirurgeons address consisting in the carrying off all the Tumour and Matter contain'd in this Purse: The niceness of the Operation, and the Pain which it gives, have alarm'd several Patients, and engag'd them to throw themselves into the Hands of Mr. *Gervasi*, or some other, who has had great Experience in these Indispositions. The Wolf being taken out, we lay on the Wound the Pledget L, which we cover with the Plaister M, over which we lay the Bolster N, and with the Band O fasten the whole Dressing. If we find any occasion for Caustic Powders, we find them in the Box P, and incorporate them with some Unguent to consume the *Kystis*; and all being over, we draw the Lips of the Wound as close as we can, that the Scar may the less disfigure the part.

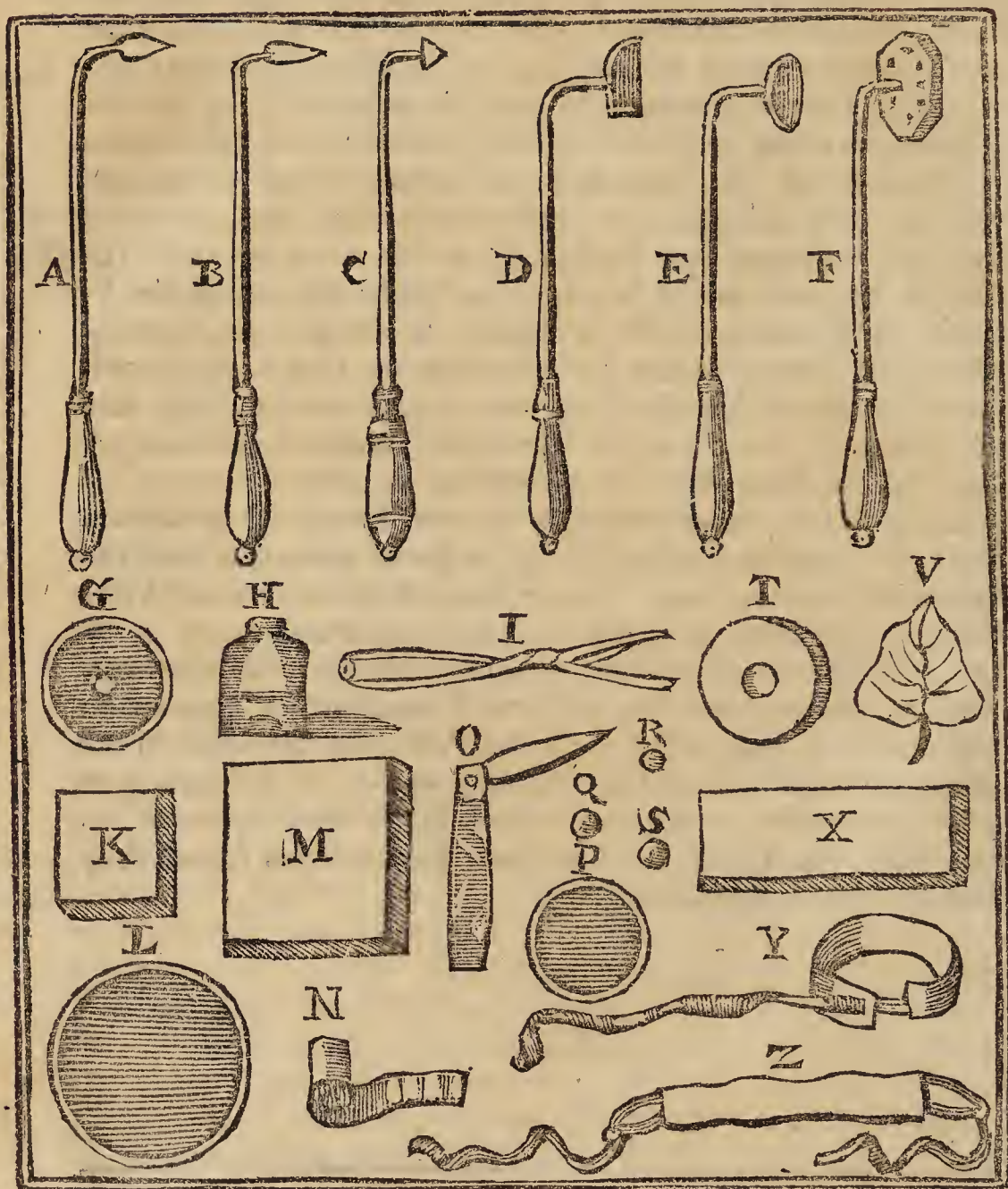
Of Dressing.

Of these four ways the last is the most sure and expeditious, and that which is practis'd by Chirurgeons whenever their Patients will consent to it. I have successfully cured several this way, in less time, and they have not endur'd so much as by the Caustic. A Youth belonging to Monsieur *de Chateaufneuf* had one of these Wolves, which occasion'd a Tumour on the Cheek; I separated it with the Point of a Pen-knife in the inside of the Mouth, and drew it out entire. It was as big as a Wall-nut; the Dressing was very easy, for with warm Wine, in which was a little *Mel-rosatum*, he rinc'd his Mouth daily several times, and it heal'd.

H h

FIGURE

FIGURE LVI. For CAUTERIES or ISSUES or FONTANELS.



*Definition
and distin-
ction of
the Cau-
tery.*

THE Cautery is taken in two Senses, either properly for every Caustic which is strong enough to make a hole in the Skin, whether Instrument or Burning Material, or improperly for the hole when 'tis made, either actually or potentially; so that we give the Name of Cautery as well to that which burns the Skin, as to the Burn, which is then defin'd to be a small Ulcer of the Skin made by Burning Materials, by the Industry of the Chirurgion, in order to his propos'd ends.

I don't here pretend to particularize the Diseases which require an Issue, in order to their Cure, that is the Physician's Province; but confining my self to what is the Chirurgion's

Por-

Portion, shall content my self with shewing you how this Operation is to be perform'd.

Cauteries from all Antiquity have been divided into two Species, viz. the *Actual* and *Potential*. The first are hot and burning Irons, which cauterise and burn at the very instant they touch: The other are Compositions of burning Medicaments, of which are made little Stones, which laid on some Place produce a Scar there, which being fallen off, leaves a small deep Ulcer, thro' which the Humours run out as long as we keep it open.

Divisions of Cauteries into Potential and Actual.

Some Physicians, who would have this Distinction thought merely Chimerical, assert, that there are no such things as Potential Cauteries, and that every Caution is a material one, whose Action is to burn. But we Chirurgeons are not oblig'd to know so much, we have always made a Distinction, because the Potential does not at first burn as the Actual does; but some time after its dissolving, and let them give us leave to continue the Distinction, because grown habitual, and the opposite Argument is so Philosophical, that several Chirurgeons can scarce comprehend it.

The first Chirurgeons have left us an infinite variety of these Actual Cauteries; but tho' they have left us a great many, they have yet also left us the liberty of Inventing new ones on proper Occasions: I shall content my self with here representing to you six, which will suffice to give you an Idea of the Practice of the Ancients.

Six Actual Cauteries.

The first A, is the *Ensel*, so call'd from its point being like that of a Sword.

The second B, is the *Olive Caution*, so term'd from its being shap'd like a small Olive.

The third C, is the *Button Caution*, because made like a Button, with a small point in the middle.

The fourth D, is the *Cutellary Caution*, that is a sort of Knife which cuts only one side.

The fifth E, is the *round Plate Caution*, which is used to correct or prevent Putrefaction after a Member is cut off.

The sixth F, is the *great Plate Caution*, of an Octogonal Figure, which is apply'd red hot to the Place, from which we have cut off a Cancer, in order to dry up the Corrosive Humidities, and at the same time stop the Blood of the open Vessels.

You may by these judge of all the rest, which differ only in Figure, and are not less cruel: I know no Chirurgeon which at present uses them, and tho' I have caus'd them to be Engraven here, 'tis rather to excite horror in you with regard to their Cruelty, than advise you to use them.

Potential
Cauteries
more used.

Potential Cauteries are more in use; and we draw great Advantages from them in inveterate Distempers, after having in vain made use of other Remedies, as in Rheumatisms, Gouts, Defluxions on the Eyes, and in all those which we commonly call Catarrhus.

Places to
which they
are to be
apply'd.

We make use of Cauteries to several parts of the Body, but those to which they are most commonly apply'd, are the hind part of the Neck betwixt its first and second *Vertebra*. Secondly the upper part of the Arm, in a little Cavity which forms it self betwixt the *Muscle Deltoides* and the *Biceps*. Thirdly, the inner part of the Knee, a little below the *Ligula* of the Flexures of the Leg.

Precaution.

Before we apply the Caution, we are to be provided with Caustic Stones, of whose virtue and efficacy we are assured, for when we buy them from a third and fourth Hand, and sometimes of one, and others of another; we cannot answer for their Efficacy and Success, they may eat too deep, or too shallow, which may oblige us to lay on others. But they prove yet worse when they are too moist, and have not been kept in a dry place, when they never perform so well. Wherefore, that the Chirurgeon may not be deceiv'd, he ought to make them himself, and keep them against an occasion, their Composition which follows being very easy.

Composi-
tion of a
Caustic.

Into a Pail of Water we are to throw a Peck of Oak-Ashes, two Pound of Pot-Ashes, one Pound of Quick-lime, and half a Pound of Salt; leave them to steep three or four Days, stirring them daily with a Stick: All the Ingredients being well settled, we are to Strain them so well, that nothing may pass but very clear Water, which we pour into a Kettle over the Fire, making it boyl 'till the Water turns to a black Stone, and having taken it out of the Kettle, we break it into small Stones which we put into Glass Vials, and stopping them very well, keep them in a warm and dry place.

Applica-
tion of the
Potential
Caution.

There are some Circumstances to be observed, in order to the due Application of the Caution. We begin with cutting the little round Plaister G, of the size of a Crown-piece, and provided with a hole in the middle; we cover it with a very emplastic Unguent, that it may stick fast to the Skin, and hinder the Scar becoming larger than the hole in the middle of the mentioned Plaister, which is to be proportion'd to the Dimensions of the Caution which we design to lay on. We lay this Plaister on the place destin'd to the Caution, taking care that it be well placed.

As soon as the Plaister is laid on its place, we open the Bottle of Caustics, in order to take out the Stone H, which we both draw out, and lay on with the Pincers I: Before we lay it on, we wet the Skin with a drop of Water, to facilitate the dissolution of the Stone, that it may the sooner take Effect.

Over

Over it we lay the little Bolster K, shaped square, and wetted for the same end, this we cover with the large Plaster L, and afterwards with the Bolster M, and over that fix a circular Bandage with the Band N, which we draw somewhat tight, that it may rest on the caustic Stone, and hinder the *Apparatus* from shifting its place.

When we are acquainted with the caustic Stone which we are to use, we know certainly when to take off the *Apparatus*, and can always avoid the Inconvenience of taking it off before it has formed its Scar, and consequently save the Trouble of coming again two hours after, or of laying on another, as it sometimes happens: Nor are we to leave it on too long; for if the Stone be good, it may in a Child or Woman, whose Skin is most tender, have cut too deep, it acting more or less, according as the Skin which it attacks is more or less tender. If we find the Scar well, we take off all the *Apparatus*, and with the Lancet O make two small Incisions crossways in the Body of the Scar; on which we lay the little bit of Linnen P, covered with a little *Basilicon* or fresh Butter, and over that lay the same Bolster and Bandage.

We continue the same Remedy until the Scar falls off, *Of the* when we put into the hole the great Pea Q, or a round *Stopple* Stopple made of Iris-Root R. Some content themselves *with which* with putting in a little Waxen Ball S; but the Peas and *we fill the* Iris-Root are better, because they imbibe the Humidities of *hole of the* the Caustery, and we take them out always bigger than we *Issue.* put them in, which keeps the Orifice of the Ulcer, which inclines to contract and fill up, in a just Magnitude.

We then lay on a little bit of white Linnen with a hole at *Of the* the place of the Pea T, and over that an Ivy-leaf V, which *dressings.* is said to be particularly efficacious to procure a regular Suppuration: We end then with the Bolster X, and the same Bandage as the precedent Day. We are to take care to dress these Cauteries or Issues twice each day, and to make use of Linnen whitened with Lye, if we would avoid an ill Scent; and if the Flesh grows too much, and transcends the edge of the Issue, it must be consumed with pulverised burnt Al-lom.

When these Cauteries or Issues, which some call *Fouticles*, *Places* and the *Italians Fontanells*, are made on adult Persons, they *where these* are generally applied to the Arms or Legs, that the Patient may *Issues are* dress them himself, and to that end we make small Bands *applied.* shaped like Stirrups Y, Z, which are very convenient for the Arms and Legs. But when they are made for Children, they are made in the Nape of the Neck, for three Reasons: First, because in those which have a great Head, and Defluxions on the Eyes or Face, the Caustery applied there better exhausts the

superfluous Serofities of those distempered Parts for which 'tis made use of. Secondly, because the Care of dressing them is left to the Mothers and Nurses, and their Cap hides the Band which surrounds the Head. Thirdly, because in Children they are only made for a time; and the Disease being over, we suffer the hole to close up after it has sufficiently purged the Patient: But when the Person is past forty Years, he ought to keep it open for the rest of his Life, if he would not run the risque of falling into some grievous Distemper, which this Humour that ran through the Issue may in time cause.

FIGURE

FIGURE LVII. For CUPPING.



THE *Cucurbitula* or cupping Instrument is shaped like a Figure and round Box as big as the Fist, whose Entrance is narrow- Matter of est at bottom. The Matter of which 'tis form'd is either Glass, the Cupping Horn or Copper; but we at present make use of no other Instrument but those of Glass, because they are most proper, and that being transparent, we see what passes in them, and by what Means know whether there have issued out a sufficient quantity of Blood before we take them off.

The use of Cupping is as ancient as Chirurgery. *Hippocrates* mentions it, and *Galen* boasts of its good Effects in the cure of the use of several Diseases. We cannot doubt but that the Application which the

on of Cupping-glasses has its Excellencies and Advantages; but we are not obliged to make use of them in all the Cases in which our Predecessors applied them, they gave too great an Extent to what *Hippocrates* and *Galen* left us in writing on that Head: We are not to believe, for Instance, that by applying them to the top of the Head, they can relieve the Relaxation of the *Uvula*; that being used on the Region of Ureters, they should be able to draw a Stone out of the Reins, and make it fall into the Bladder, and an infinite number of the like Fancies.

As the World has acquired more perfect Knowledge in Anatomy, the use of Cupping-glasses has become proportionably less frequent: They have been suppressed in all the Diseases in which they have been discovered to be of no Efficacy: And we have retained the Use of them in those where they afford (or we can expect from them) the least Relief, as in the Apoplexy, Lethargy, and all the Defluxions of the Head which attack the Eyes and Face.

Countries
where Cup-
ping is more
used.

The *Italians* and *Germans* are not so much disabused on this Head, as we are in *France*: In those Countries we find they use moist hot Stoves or *Bagnio's*, to which they frequently resort for the sake of Cleanliness: When they find themselves too replete, and when they believe it to proceed from the abundance of Blood, they cause these little Cupping-glasses to be applied to several Parts of the Body, and by that Means draw out as much Blood as they think proper to relieve them. This Practice is not relished by the *French*, who are perswaded that by taking away two or three Porringers of Blood, we with more Efficacy answer that end, than by these small Scarifications, which cannot let out any other than the subtil Blood forcibly drawn from the Superficies of the Body.

Manner of
applying
them.

Travelling in *Italy*, I went to see their Stoves: The People of Quality have them in their Palaces for their private Use, and in the Towns there are public ones, where any Person may go for his Mony. There are small Cupping-Instruments A A, which are called Cornets, because made of Horn; they apply what number, and to what Parts of the Body they think fit, because the Person is stark naked in these *Bagnio's*. To apply them, they put them in a Basin of hot Water, and taking them out one after another to fix them on, they only put the end of a lighted Lamp B into the Cornet, which being filled with Smoak, and instantly clapt on the Part, sticks fast there: They take it off in a small space of time, and with a sort of small Phlegm C, they make some small Punctures, then they fix them on again in the same manner; and thus by several Cornets draw out the quantity of Blood which they judge necessary to their Health,

I had the Curiosity to visit those in Germany. They are *Disposition* large vaulted Rooms, in which there are Benches on both sides, of the A-like the Forms of Colleges: They have two Apartments, in *partments* one of which the Men strip themselves, and in the other the *in Ger-* Women before they enter into the Stove. Both of them are many. naked, except only a bit of Linnen which reaches from their Girdles to the middle of their Thighs. As they enter, so they place themselves, the Men on one side, and the Women on the other. Being seated, a Servant comes and applies the Cornets to the places which they direct him. I saw them applied to almost all Parts of the Body; of which I asked the Reason of one, who caused one to be applied to his Instep, why he did it there? He answered, that 'twas against the Gout, and told me withal, that since from time to time he had applied it there, he had been free from that Distemper. The Servants or Attendants in these places are so used to put on these Cornets, that they do it with a surprising Readiness and Address: They make the Punctures with a little Phlegm, which they *Dexterity* hold in one Hand, filliping it with the other, they make these *in making* Punctures in what shape they please, ranging them next one *the Pun-* another; some of them represent the true Lover's Knot, o- *cture.* thers a Heart, and others the Cyphers of their Mistresses Names, conform to the Desire of the Person cupped. In short, they are so fully perswaded of the good Effects of these Ragnio's, that they deprive themselves of all things, rather than miss them; and indeed the Women which go there have a very fine Complexion, for the Sweat discharges those Impurities which spoil the Skin.

There is another sort of Cornets D D, which are used at *The Cor-* Bourbon, they are the small ends of Horns a little long, and *nets used* pierced at the sharpest ends; they lay the widest end on the *at Bourbon* place where the Application is to be made, and at the narrowest they suck, to draw the Skin into the Cavity of the Cornet; he which performs this Suction, has in his Mouth little Globules of Wax E E, with which by Means of his Tongue he stops the hole at which he suck'd, and proceeds on to another, and so on, laying on as many as are necessary.

There are two sorts of Cuppings, the one which are call'd *Dry and* dry, because they consist in the bare Apposition of the Cup- *moist Cup-* ping-glass, without drawing out anything that wets the Skin; *pings.* and the other, which we call humid or scarified, because they make Scarifications to draw out the Blood. The Chirurgeon must at least have two sorts of Cupping-glasses of different sizes; the least F F, for Children or those Cases when they would make but a light Attraction, and the larger G G, for grown Persons or those Occasions which require a strong Suction.

Preparation of the Subject.

In order to apply them, we are to seat the Patient in a proper Posture, which depends on the place where the Application is to be made: But as we seldom use them to any other Part than the Shoulder, we shall suppose them to be fixed on that place. If the Patient is in a State fit to rise, we may place him in a Chair, with his Head inclining forwards, and rested on a Pillow laid on a Table before him; if he be in a Lethargy or Apoplexy, he must be laid on his Belly, and after having uncovered his Shoulders, they are to be rubbed hard with several very hot Napkins to warm the Parts, and draw the greater quantity of Blood, where we must not forget before-hand to cause a good clear Fire to be made, in order to the frequent renewal of the Napkins.

Ordinary Application of the Cupping-Glass.

We cause the Light H to be held by a Servant, as well to see clearly what we do, as to light the bits of Tow II, or the small Wax Lights K K; some take fine Tow and put it into the Cavities of the Cupping-glasses, and light it there; then fix the Cupping-glass on the intended Place, and it fastens immediately: Then they apply another, which they place beside the first, and having caused to be brought to them a very hot Napkin folded several times double, they clap it on the Cupping-glasses, and a little while after we renew the Application of the Napkin, which we continue on 'till we think it proper to take off the Glasses, in order to make the Scarifications.

Use of the small Wax Candles.

Instead of Tow, 'tis much better to make use of the small Wax Candles stuck on a little round piece of Card, they yield a greater Flame than the Tow, and consequently the Cupping-glasses draw stronger, and we don't with these ends of Wax Candle run the risque of burning the Patient, as we do with the Tow. We are to observe, that when we apply the Cupping-glasses to a young Girl or a Woman, we are to place them lower than when we use them to Men, because the Scarifications leave little Marks which disfigure the Shoulders, and which would make the Ladies uneasy to have them in a place where they may be seen, for Women don't value those Defects which they can hide.

Manner of taking off the Cupping and Scaryfying.

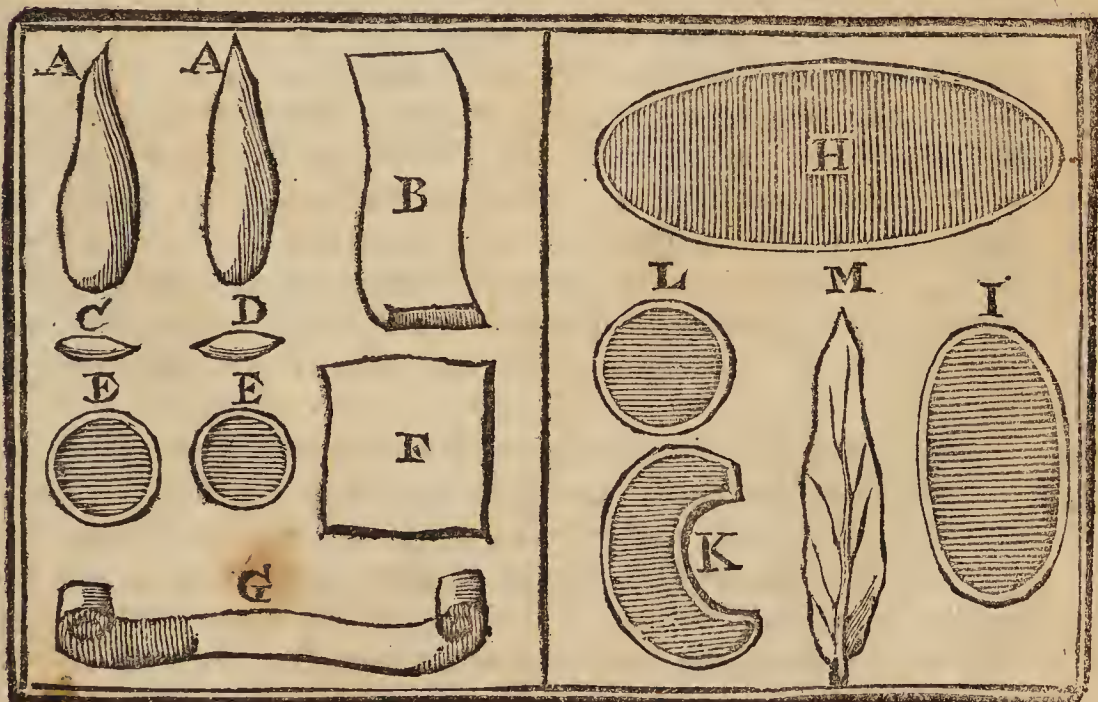
The Cupping-Glass is taken off by pressing a little on the Skin with the Finger to let in the Air: We then take the Lancet L, with which we make several Scarifications on the place where the Glass has been applied, we begin at the lower end of the Circle, where we make three Scarifications, we continue mounting upwards where we make four, then five above them, then four, and end with three, so that they are all interlaced in one anothers spaces, in manner as represented by the Figures M; we light the Wax Candles which we place on the scarified places, and then over them apply the same Cupping-Glass, we do the same thing to the second, we cover them with a very hot Napkin, and repeating the Application of these Cloths we

see whether they fill with Blood; and when we judge there is enough, we call for a Vessel to put the Blood into which is contain'd in the Cupping-Glass.

If the Physician (who is commonly present in these Diseases *Manner of* which require a quick Evacuation) thinks fit to apply them a *applying the* second time, we must have other Wax-Candles, because the *Cupping-* first being wetted with the Blood cannot be lighted again: And *Glass a se-* as to the rest we are to proceed the second time as we did the *cond time.* first, and a third time reiterate the Operation if Necessity requires it.

The Operation ended, we are to dry up all the Blood very clean, washing the Shoulders with warm Wine, and lay on the the two Plaisters NN, on the two Places where we have made the Scarifications. They are of burnt Ceruse, because nothing is now to be done but dry them up; they are to be renewed some days after, which is to be done 'till the Patient is perfectly cured.

FIGURE LVIII. For LEACHES and VESICATORIES.



L EACHES are little aquatic Worms which we find in Lakes and Rivers: These Insects frequently fasten on the Legs of those which bath or wash themselves, and to the Feet of Horses when they are watering; they are called Horse-leaches and Blood-suckers, because they suck the Blood of the Animals on which they fasten themselves.

They are of two sorts, the good and the venomous: The Choice of good are those which live in running Waters; they are long good and and bad Leaches

and slender; they have a small Head, their Back green striped with yellow, and their Belly a little red: These are those A A which we are to make use of. The Venomous are in standing Waters, Ditches and Bogs: They are thick, they have a great Head, and the Back striped with blue; these we are to reject.

Parts to which to be applied.

We frequently apply Leaches to the Parts which cannot bear either Bleeding or Scarifications, as the Face, the Lips, the Nose, the Joints, the Fingers, and the *Anus*: To which last Part they are applied to evacuate the Piles. Leaches supply the place of Bleeding, their Sting or sharp-pointed Needle performing the Office of the Lancet.

Their Preparation.

We are to apply Leaches when fresh taken, we are first to let them disgorge themselves in Water for some Days. When we would use them, we are to take them out of the Water, and shut them up close in some Box from the Evening before 'till the next Morning, or from the Morning to the Evening, in order to render them the more hungry and more greedy of sucking.

How they act.

When we apply the Leaches with our Fingers, they may chance to stick to them, or often will not bite, wherefore we are rather to hold them on a bit of Linnen B. 'till they fasten on the Skin: We always use them the same way, and place a second, a third, and as many as are necessary. When these Leaches are thus fastened on the Part, they strike out of their Head a Sting, which is nothing but the Point of their *Proboscis*, which is like a Tube, so disposed that it folds it self to shorten it, and unfolds to lengthen it self; so that when the Leach attempts to draw the Blood of any Animal, it extends its *Proboscis*, and searches for a Pore in the Skin to introduce it, and thrust it in far enough to find the Blood, which ascending into the Cavity of this Trunk, that way enters the Body of the Leach.

Amputation of their Tail.

The Leaches don't quit their hold before they are satiated; if they fall off too soon, we apply others to the same Orifices. When they are full, and we would not have them fall off, we cut off their Tail with a pair of Scissars, and from thence see all the Blood distil which fill'd them; so that they void by the Tail the Blood which they receive by their Trunk, like an Air Pump; and thus one of them alone will draw more Blood than six others, whose Tails are not cut off. When we believe

Manner of taking them off.

we have drawn Blood enough, we are not to tear off the Leaches, lest they should leave their Stings behind them: But to make them quit their hold, lay a little Salt-petre or Salt on their Back, and they will loosen immediately. We are to suffer the Blood to run out a little, that no Venom may remain behind; we are to wash the Punctures with Salt-water, and if the Blood does not stop of it self, we are to lay on a little scrap'd Lint C, or burnt Linnen D. We may lay on the

Plaisters

Plaisters E E, a little Bolster F, and a Band G rolled at both Dressing ends.

The Vesicatory is a Medicament prepared from *Cantharides* Of Vesicator or *Spanish-Flies*, which being laid on the Skin, by its Acrities. many raises Blisters or Bladders, whence 'tis called the Vesicatory.

This Remedy is prepared from the Flies *Cantharides*, dry'd *Their Cons-* and pulverised, which we work up with Leaven and a little *position.* Vinegar, in order to make it into a Mass. The Authors which direct us to mix Vinegar with it, tell us that the Fermentation which must arise from the mixture of the Vinegar with the alkalous Salt of the *Cantharides*, augments the Virtue of the Vesicatory. Others affirm that the Acid of the Vinegar enfeebles the Actions of the Vesicatory rather than encrease it, since it enervates the volatile Salt of the *Cantharides*; on which depends all their force. I don't know which of them is in the right, but must stick to my own Experience; for when I have added a little Vinegar, I know that they have very answer'd their desired end.

We make use of Vesicatories in several Distempers, which *Its Use and* require the lively Agitation of the Fibres, and the violent draw- *Applica-* ing out of the Serosities, as in *Apoplexies*, *Epilepsies*, and *Hemition.* *cranie*: In those Cases we lay them on the hind part of the Neck, preparing the large Plaister H, which we lay betwixt the Shoulders. Blistering is an excellent Remedy against the Bittings of venomous Beasts, and against the Gout: We cover with this Composition the bit of Linen I, which we lay on the bitten place. They are also excellent in Defluxions on the Ears and Eyes: When we spread on the Plaister K, shap'd like a Crescent, and lay it on behind the Ear; and we are relieved in the Tooth-ach, by laying the small round Plaister L on the temporal Artery.

The Chirurgeon is to make his Vesicatory stronger or weaker, *Its Diffe-* according to the Part and Disease; he is to allow a less quan- *rence.* tity of *Cantharides* to a Girl or Woman, because their Skin is tender, especially when he applies it to the Temple, or behind the Ears; but he may enlarge his quantity for an old Woman, because of the hardness of her Skin. If he applies Vesicatories to the Shoulders for the *Apoplexy* and *Epilepsie*, or to the Thigh for the *Gout*, he must allow enough to raise a great number of Blisters, and draw out a greater quantity of the serous Humour.

Before he lays on the Blister, he is gently to rub the Part, *The run-* that the Vesicatory may have the more expeditious Effect: He is *ning out of* to leave it on four or five Hours, and sometimes longer, ac- *the Blisters.* cording to the tenderness and disposition of the Patient. When the *Epidermis* is risen in Blisters, the Pain ceases to be so great, and these Blisters being full of serous Humour, he is to open them to let it out: He also causes it to run out for some Days, by laying

laying on the Pear-tree Leaf M; and the more he causes to run out, the more the Patient is eased, and deliver'd from the pressing Danger; which is the end propos'd in this Operation. When they have run enough for two or three Days, he applies Desiccatives to heal them.

*Another
sort of Plai-
ster.*

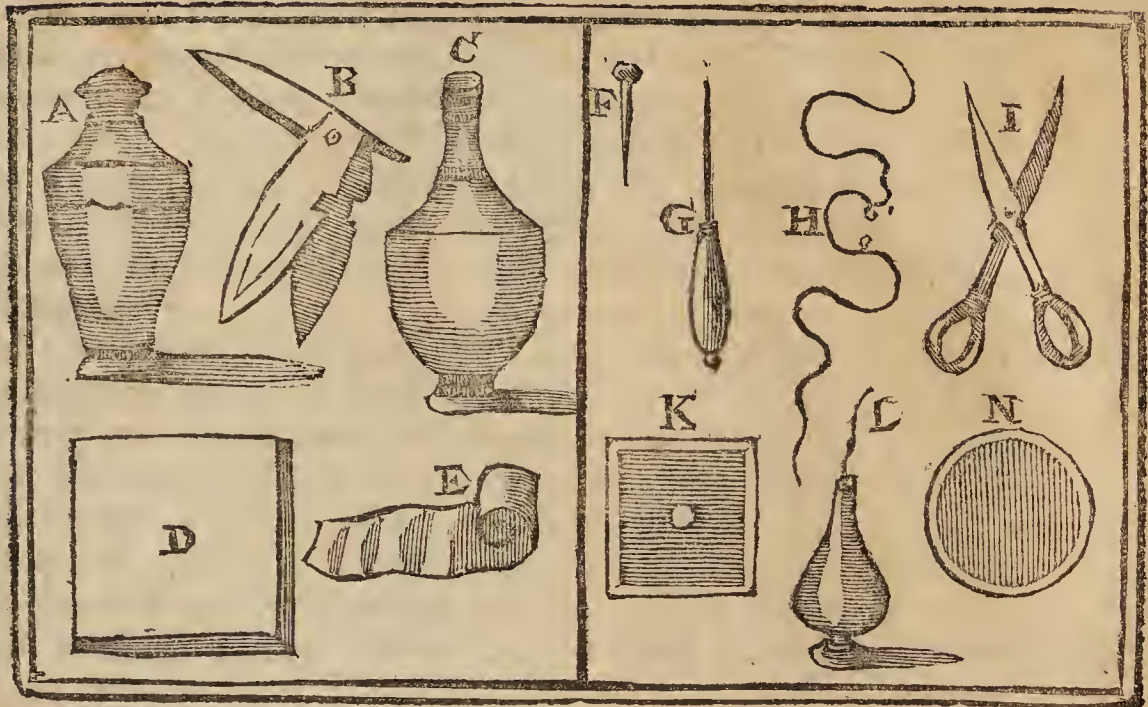
We find at present in every Apothecary's Shop, a Composition of the blistering Plaister, which is more commodious than that of which I have been speaking. When we would not raise so many Blisters, we spread the Composition on a little bit of Linnen or Taffeta, when 'tis to be put behind the Ears, and on the Temples; which Plaister deceived a Waiting-woman, whose Story runs as follows.

*An Instance
of this na-
ture.*

A Lady of Quality, immediately after her Delivery, ordered one of her Women to prepare her a Plaister of Madam Fouquet's astringent Ointment, which she had given her to be laid on the Navel: Two or three hours afterwards this Lady sent for me, to shew me a great Clot of Blood which she had just voided and took to be a false Conception, withal exaggerating the Obligations which she had to that Plaister, and the good Effects which it produced on all those who made use of it after their Delivery. A few Hours after the same Lady sent for me again, being very much alarm'd with a Swelling which was risen on her Navel, telling me that her great Guts were come out: I found it to be a great Blister occasion'd by this Plaister, which was not that of Madam Fouquet, but a Veficatory. I pierc'd the Blister, and it not being necessary to procure the issuing out of the serous Humour on this occasion, because that part of it which form'd the Blister, and caused all the Pain, immediately run out of it self, I laid a Plaister on it to dry it up immediately. The waiting Woman had two Plaisters in her Trunk, and mistook the Veficatory for that of Madam Fouquet, which saved the Lady's Life whilst shut up in the Trunk.

FIGURE

FIGURE LIX. For the ECCHYMOISIS
and WARTS.



THE Greek Word *Ecchymosis* is deriv'd from *Ex*, without, and *Chymoin* to stain or give a nasty Tincture, and accordingly this Disease is an Extravasation of the Blood under the Skin, which stains and blackens it.

'Tis caused by a Contusion or Bruise, which breaking the little Fibres of the Muscles, and the small Capillary Vessels, occasion'd by the Extravasation of the Blood, which Tinctures the Skin of a livid and marble Colour.

Some of them are slight ones occasioned by bare Pinching of the Skin, or a drop of Blood sliding under the Skin after Bleeding. Others are more considerable, and are caused by a Fall, or a Blow with a Stick or a Stone; and there are yet others which are very great, an Instance of which I have seen in a Person, who attempting to leap a Ditch, so strain'd his Leg, that he open'd a Vessel, from whence issued out a large effusion of Blood, which dispers'd it self thro' the part to that degree, as to swell it, and tincture it all over black.

The light *Ecchymoses* are sometimes accompanied with little or no Pain; they are not dangerous, they only disfigure the Skin, by staining it with a livid and marble Spot. When the effusion of Blood is but in a small quantity it insensibly resolves, but when there is much it produces an Abscess, which never terminates any otherwise than in Suppuration? If its quantity be too great, it may draw on a Gangrene or Sphacelus, by compressing the part too hard, and Suffocating the natural Heat.

Heat. 'Tis observed, that the Bruises and Contusions of the Legs and Feet are harder to cure than those of other Parts, by reason that the Skin being there thicker and firmer, the Blood continues there longer, and is more difficultly dispersed.

Their
Causes.

The *Ecchymoses* always proceed from external Causes, as a Blow or a Fall; for some heavy thing falling or striking hard on our Body, the Vessels finding themselves press'd by the violence of the Blow, are constrain'd to contract themselves, and press against one another, and the Blood to escape out of their Orifices to the part where those Vessels terminate.

Cure.

Slight *Ecchymoses* are cured by the external Application of warm Wine, Brandy, Spirit of Wine, Hungary-Water or *Fioravanti's* white Balsam, which we take out of the Pot A. We cause the livid Colour to vanish, by scraping on it *Sigillum Virginis* or *Sceau de la Vierge*, and laying it on the Bruise. In *Ecchymoses* which happen to the Eyes by the Game of Tennis, when a Ball hits either of them, we immediately apply cold Water, which is a good Repercussive to hinder its swelling too much, this is called a black Eye. Cold Water is good the first Day, but afterwards Resolvents are necessary: We prepare a *Collyrium* with Fennel and Eyebright-water, with which we mix Saffron, Camphire, and some drops of Spirit of *Sal Armoniac*.

Remedies
for the
greatest.

If the Contusion is great, Wormwood boyl'd in Wine is good, or else we infuse in Spirit of Wine the Flowers of St. John's Wort, Nutmegs, Clove-July-Flowers, and Pomgranate-Rinds, with which Infusion we rub the part. We also apply Cataplasms composed of the four Meals, Bryony, Roses, Camomile, Mellilot and Liquid Storax; we may also make use of Wine, in which we have boiled all the Aromatic Plants, which subtilise and rarify the extravasated Humour.

Observation.

The first wounded Patient which I dress'd at the Canonading of Nimeguen in the Year 1702. being in the Army with the Duke of Burgundy, was one of the Life-Guard, which had a great Contusion on his Shoulder which produced a great *Ecchymosis*. It was occasioned by a Canon-Bullet, which in its Passage had carried off a piece of his Coat and Shirt, and so bruise'd his Shoulder, that it was almost grown insensible. I Scarified it to the quick, and to the Scarifications applied Spirit of Wine, in which I had dissolved Salt; I continued to dress it at Cleve where our Hospital was, and it heal'd.

Of the O-
peration.

When the Contusion is so big as to threaten a Gangrene or Sphacelus, we are immediately to open it, and make several Incisions, as well to get rid of the violent Tension, as to discharge part of the Blood and Serous Humour which stifles the natural Heat. When the swelling is not considerable, we content our selves with making superficial interlacing Incisions, with the Lancet B; if larger, we make deeper Scarifications; but if of the biggest sort, we proceed to make such Incisions

as touch to the quick, and make the Patient sensibly feel it. We apply to these Orifices camphorated Spirit of Wine, which is in the Bottle C, and every thing else which tends to quicken and vivifie the Part; after which we lay on the Bolster D, which we fasten on with the Band E, both being wetted in the same Spirit of Wine.

The *Verruca*, which the vulgar call Warts, are small, round, Of Warts. knotty or rough Risings in the Skin, and grow particularly on the Hands of young People. The *French* call them Leeks, from their being composed of several small Points resembling the Roots of those Vegetables, or rather because like them they have their Roots, which actually spread under the Skin, whence it is that they shoot out again after we have made them fall off.

'Tis a vulgar Notion that these Warts are occasioned by foul- Their Cause- ness, which some People suffer to gather on their Hands, and that they never happen to those who daily wash their Hands: but the Learned search for the Cause in the too great acrimony of the nutritive Liquors. They tell us, that Warts are nothing but carneous Excrescencies, occasioned by the Extravasion of the nutritive Juice, which by its acrimony has corroded the capillary Vessels of the Skin. They are of three sorts, Their difference. large, middle-siz'd, and very little, whose number is sometimes so great, that they are not to be reckoned up.

Popular Errors are infinite with regard to the Cure of Warts, A vulgar Error. and all so extravagant, that they don't deserve our particularising of them; and some are of Opinion, that if any person numbers another's Warts, he will have as many himself.

Some will persuade us that they make them fall off by frequent hard rubbing of them; others thrusting into them the Point of the Pin F, and putting the remainder or head of it into the Flame of a Candle, thus cauterise them, and by this burning, hope to force them to fall off. Others cauterize them with a red hot Needle; but these Methods are uncertain, and may occasion Pain and an Inflammation, and the three best ways of curing them, are by binding, cutting or Their Remedy. consuming them.

The Ligature is only fit to be applied to great ones, whose Of the Ligature. Basis is narrow: 'Tis made with a Horse-hair, or with Silk H; some dip it in *Arsenical* Water, that it may cut the quicker, but that is dangerous. Frequently those troubled with Wars don't consult the Chirurgeons, but bind them themselves, and make them fall off their own way.

Others, impatient at the sight of them, cut them off with the Scissars I; but this is putting themselves to Pain to no manner of purpose, if they don't make use of some corrosive Remedy to consume the Roots, for they will not fail to shoot out again, and grow bigger than the first time: They being then cut off, must be touched with Oil of Tartar *per Deliqui-*

um, or we must lay on them pulverized *Allom* or red *Precipitate*.

Of the Corrosion.

The third way, is to consume them by such Corrosives as are strong enough to compass that end, of which kind are Spirit of Vitriol, Aqua-fortis, Spirit of Salt, or Butter of Antimony: But these Remedies are not to be used without due Precaution, without which they will burn and eat deep Scars. We must not entrust these Ingredients into the Patients Hands to apply 'em themselves; but that it may be done with Safety, we are to prepare the little Plaister K, provided with a hole in the middle of the bigness of the Wart which we are to touch: We then dip the Straw L into the Liquor in the Viol M, with which we touch the Wart: The mentioned Plaister which covers the Circumference of that Excrecence, keeps it from being hurt by the Corrosive, if any drop of it should in the application fall on it, and hinders its spreading or operating in any other place besides the Wart. I have seen several fall off by being touched with the Spirit of Salt, which I prefer to the others, though 'tis not so corrosive, and had rather apply it several times, than risque the Inconveniencies which I have seen result from the use of *Aqua-fortis*.

The Caustics preferable.

If we will take the Pains of carefully managing Caustics and Corrosives, this way is preferable to the former two; because these last so eat out the Root, that the Wart never returns; and further, we may apply them to those Warts which are too small to be either bound, or cut off. The Plaister N finishes the Cure.

Of other small Excrecencies.

There frequently grow on the Superficies of the Body little Excrecencies or Pusshes, whose Base is narrow (like small Crests, or little flat Pearls,) which would very much encrease if they were not hindered; they grow on all parts of the Skin, and especially on the Eye-lids. The Operation requisite in this Case consists only in cutting them off with the Points of the Scissars, they being so small, as not to emit any Blood, nor do they need any Dressing. The King has had several of them at different times, which Mr. Felix has cut in this manner: The Pain is so light, that 'tis scarce felt, and the places where they are cut off heal of themselves, without the Assistance of Chirurgery.

FIGURE

FIGURE LX. For the OPENING a DEAD CORPS.



WE have hitherto spent our time in the Demonstration of those Operations practised on living human Bodies ; let's now proceed to those performed after Man is dead : They are two, the one the Aperture of the Corps, and the other the embalming of it. Though these two Operations are not attended with the Cries of the Patient, nor do the Subjects on which they are exercised ever complain of the Chirurgeon, they ought yet to be performed according to Art ; and the Dexterity of the Operator ought not to be less shewn *Dexterity* in them, than in any of the rest. I proceed to demonstrate *requisite to* them *this Opera-*
tion.

Reasons
which en-
gage it.

them to you, with all the Exactness which they require, and with them we shall conclude these Operations.

Several Reasons oblige the Opening of a dead Corps : For Instance, in case of many Children in a Family, one of which coming to die, the Father and Mother caused it to be opened, that by discovering the Cause of its Death, they may prevent that of the rest.

Observati-
on.

A sudden Death which terrifies a Family, or excites the Curiosity of Physicians and Chirurgeons frequently occasions the opening of a dead Corps, as it happened to two dead Persons at *Versailles*. In the same Year one of the principal Officers of the King's Goblet fell down dead, whilst waiting at Table on the Duke of *Burgundy*, and four Months after one of the King's Footmen also fell down dead as he was warming himself in the King's Anti-chamber. I opened them both in the Presence of the principal Physicians of the Court; and thence it appeared, that it was the Interception of the Circulation of the Blood which caused both these sudden Deaths.

We find a dead Person assassinated or drowned, and are obliged to open the Body in order to draw up an exact Report of the Condition of the injured Parts, and that frequently in execution of Orders of Courts of Justice, and Sentences which command it: If a Person is suspected to be poisoned, the opening of the Body will testify the Truth.

A Relation.

The Governor of the Queen's Pages dying at *St. Germain*, the Servant-maid disagreeing with her Mistress, told the Grand Provost that she believed her Mistress had poisoned him. The Grand Provost seized the Widow, and acquainted the King with it. Mr. *Felix* and I were ordered on the next day to open the Body, but found no appearance of Poison; the Widow was cleared and released on our Report, and the Maid fled to avoid the Chastisement which such an Accusation deserved.

We open almost all Persons of Quality, and particularly the Princes and Kings, to embalm them, before their Bodies are laid in the Sepulchres of their Ancestors. But whether it be any one or other of these Causes which obliges the Aperture, the Chirurgeon is to perform it methodically, and in the manner which I am going to demonstrate.

Time of o-
pening the
Corps.

The time of opening Bodies is commonly twenty four hours after their Death: The Laws direct so, and we are not to attempt it in less time, though we have unquestionable Signs that they are really dead, and this is to avoid the Reproach of the Publick, which would otherwise accuse the Chirurgeon of too much Precipitation, and to satisfy those who we hear declare that they will charge their Heirs or Successors, not to bury them before the Expiration of the mentioned number of hours after their Death, for fear that they should be buried alive, being persuaded that such things frequently happen by the Stories which are made on that Head.

Some

Some time before the appointed hour, the Chirurgeon is to *Prepara-*
send his Apprentices with the necessary Instruments, which *tives.*
are a Saw, Pen-knives of several sizes, Scissars, Levitors, Nee-
des, a Lace, Spunges, some bundles of Tow; and in short, all
whatever is marked in the LXth Plate.

The Apprentices being come to the House where the dead
Body lies, place a Table long enough to lay the Body on in the
middle of the Room; they cover it with a Woollen Cloth,
and on that lay the Body, having first put on it a Napkin
three or four times double longways, for Modesty-sake, to co-
ver the privy Parts, especially if a Woman: Then they lay o-
ver another Cloth which covers the whole Body. They place
under the Table a great Basin to lay the Entrails in, as they
are taken out, and a Pail of Water to wash the Spunges; they
ask for necessary Linnen, they prepare the Wax candle, and
wait on those who are to be present at the opening.

The Company being come, the Operator, and the Apprenti- *Adjusting*
ces which are to assist him, fasten each of them a Napkin be- *of the Ope-*
fore them to prevent fouling his Cloaths. As for me, who *rator and*
have frequently made anatomical Dissections, and performed *Apprenti-*
the Aperture, I have Linnen Aprons and Sleeves made on pur- *ces.*
pose, which I find more convenient than Napkins.

The Body then being uncovered, the Operator begins with
the Head, and ends with the Breast and Belly: Which Method
is less troublesome than beginning with the Belly; for being
obliged to turn the Body to see the Brain, the Belly being open,
all the Parts contained in it will come out, and very much in-
commode the Operator; that is, supposing that we intend to
examine these three Parts, for if it be only a Wound in the
Belly or Breast which occasioned the Opening, we are to open
that Place to inform our selves of the Wound, and make our
Report, without being obliged then to work on the Head.

The Operator then takes the Pen-knife A, shaped like a *Manner of*
common Knife, or that B made like an Incision Knife, with *Operation.*
which he makes on the Head a long Incision from the Root of
the Nose, to the Nape of the Neck, and a transversal one from
one Ear to the other, withal cutting the hairy Scalp and the
Pericranium, for the edge of the Instrument must reach to
the Skull, and press upon it in these two Incisions; forming a
Cross on the top of the Head: He then takes off these four
Parts, which he separates from the Skull, and which hanging
down, leave it uncovered. Then with the Saw C, which he
fixes on the Os *Frontale* near the Eye brows, he begins to saw,
causing the Head to be held by a Servant to keep it steady. The
Frontal-bone being sawed, by little and little he guides the Saw to
one of the Temples, and then to the other; which being saw-
ed asunder, we turn the Body, in order to do the same to the
Occipital.

The Use of
the Levitor.

The whole Circumference of the Brain being saw'd asunder, we thrust one of the ends of the Levitor D into the Track of the Saw, in order to discover some Risings which on the inside exceed the thickness of the Skull, and which the Saw has not wholly cut. If we cannot succeed with the Levitor, the Instrument E, shaped like a Piercer, will compass the end, because it has more force, and is made for this purpose; for by thrusting the flat part into the Track of the Saw, and turning the Hand from the right to the left, it splits that which held it; which we easily discover by the Noise which it makes in breaking. We then slide in the Instrument F, resembling a *Spatula* with a Handle, betwixt the *Cranium* and the *Dura-Mater*, to separate all the Fibres which stick to the places of the Sutures.

Separation
of the Du-
ra-Mater.

The Skull being taken out, we place it on the side of the Head, in order to lay in it the bits of the Brain as we cut them, we wipe the *Dura-Mater*, which is moistened with the Blood which came out of the broken Capillary Vessels, and cut it in its whole Circumferences with the crooked Scissars G, and then raise it up by the two sides towards the top of the Head, to which 'tis no longer fastened by any thing besides the Point of the *Falx*, which sticks before to the Point of the *Apophyses* of the *Ethmoides*, called the *Crista Galli*, or Cock's-Comb. We cut with the same Scissars this Point of the *Dura-Mater*; and find that this redoubling of the *Dura-Mater*, which separates the Brain into a right and left part, resembles a *Falx* or *Scythe*, whence it has that Name given it. The whole *Dura-Mater* being thus raised up, we turn it towards the hinder part of the Head, and then discover the *Pia-Mater*, which envelops the Brain in all its Circumvolutions.

When we would make an exact Demonstration of the Brain, we cut it into Parts, to shew the three different Substances of which 'tis composed; but here we content our selves with separating the right part from the left, with the handle of the Pen-knife in the callous Substance to open the two upper Ventricles, which are formed like a Crescent: We then cut the greatest part of the Brain to discover the third Ventricle, then we raise up the *Fornix* or Vault with three Pillars or *Cruces*, either before where there is but one Pillar to lift up, or behind where there are two, and this according to the Experience and Address of the Operator in making these Demonstrations. The Vault being taken off, we see the fourth Ventricle, and afterwards the *Cerebellum*, in which we give one cut with the Pen-knife H, or with the other marked I, to come at the Substance; and if there be any thing particular to dissect, we make use of the Pen-knife K, which has two different edges at its two ends, and the Hook L, with which we hold it, and raise up the Vessels which we intend to dissect. At last we take out the Brain, to search whether there is no extravasated Blood, or
nothing

nothing particular at its Basis. The whole being well examined, we return that Substance into its place, and after having enclosed it in the *Cranium*, with the Needle M, threaded with the Lace N. we sew up the four quarters of the Hairy Scalp (which we had before strip'd off) in order to cover the Cap of the Brain, and contain the whole in its ordinary place.

The Operator causes his Apprentices to turn the Corps, laying it again on its Back; and having thrown a Napkin over the Face to hide it from the Spectators, he makes a large Incision from the Neck to the *Os Pubis*, and a transversal one from the Region of the left Loin to the Right. By his Incision he cuts longways the Teguments, the Muscles, and the Breast all at once, which immediately exposes to view the Parts contained in the Belly; the first of which is the *Epiploon*, which floats on the Guts; we examine the Stomach, which is placed in the left *Hypochondrium*; the small Guts, which occupy the whole umbilical Region; the great ones, which surround the small on all sides; the Mesentery, which is the common Receptacle of all the Guts; the Liver, which fills the right *Hypochondrium*; and the Milt, which, in conjunction with the Stomach, is placed on the left.

If we are obliged to take out these Parts, in order to examine the *Viscera* which they cover, we are, before we do it, to tie the Intestines at two places; the one nigh the Stomach, and the other near the *Anus*, that what is contained in them may not come out. We then lay them on a Basin on the Table, and soak up the extravas'd Blood and Liquors in that Cavity with the Spunges O O, which we wash several times in the Pail of Water set ready for that purpose. We examine the Reins, the great Vessels, the Parts destin'd for Generation, and the Bladder, in which, if any thing is to be seen, we cause to be brought near to them the Wax candle P, which is very convenient in these sorts of Demonstrations, in order to discover the most minute Particles.

In order to penetrate into the Breast, we are to separate from the *Sternum* the musculous Parts which cover them, and with a strong Penknife cut the Cartilages which are at the extremity on each side, as well on the right as left; then separating the first Bone of the *Sternum* from the two ends of the *Clavicula*, to which it sticks fast, we are to take out the *Sternum* quite whole, as I have hinted in my Anatomy, that we may have the clearer view of the contain'd Parts.

The Parts which offer first are the Lungs, which we frequently find somewhat putrified, because that being the most tender of all the Parts of the Body, and always in action, they cannot so well resist Corruption as the other; whence 'tis that the occasion of most Mens Death proceeds from this part. The Lungs are separated by a Membrane which runs along betwixt them, and is called the *Mediastinum*, to which is affix'd a large

Examination of the Viscera of the Region.

Opening of the Breast.

Examination of its Viscera.

Purse which we call the *Pericardium*, which is the *Involucrum* of the Heart. We then open the *Pericardium*, which very often, when the Person came by his Death by violent Means, contains the Water in which the Heart floats. We next make two Incisions on the Heart, one on the Right, and the other on the Left, to see whether there be nothing in the Ventracles and *Auricula*, where we frequently find some pinguid Bodies, which we term the *Polypi* of the Heart. We soak up with the same Sponges the serous Humours which we find shed in the Breast, and after having taken care to see whether there is nothing in the *Pleura*, we put all the Parts into their respective places. We then take the two pieces of Tow Q Q, pull them out and spread them, and then lay them one on the parts of the Breast, and the other over those of the Belly, replace the *Sternum* over them, and closing the Teguments cause an Apprentice to sew up the Body with the Needle R, threaded with the narrow Tape or Ribban S, in manner of the Skinners Suture, as well in the longitudinal as transverse Incision.

How to replace the Parts.

I shall not enter into the detail of the Indispositions which may be discovered in these Parts, for they are innumerable; but shall only hint to you, that whatever they are the Chirurgeon meets with, he ought on the same day to commit them to Writing in his Closet, by reason that some particular Circumstances in time may slip out of his Memory.

How the Chirurgeon is to draw up his Report.

If a Father or Mother desires a Child to be open'd, in order to preserve the rest, by a discovery of the Disease of which it died, the Chirurgeon is to draw up a Relation of whatever he observes, and give it to them, to the end that they may make use of it as a Guide in the Diseases which may happen to the others.

If the Body be open'd by order of a Court of Justice, the Chirurgeon is to give in a faithful Report, which neither wrongs the Accused, nor favours the Criminal.

Observations to be publish'd.

If a Body is open'd to discover the Cause of a particular Event, as of a sudden Death, or a surprizing Disease, the Chirurgeon is to draw up a Memorial of it, to impart it to the Publick: For we are not only to use our utmost Endeavours to render our selves skilful in our Profession, but are also obliged to endeavour the Instruction of others.

After opening the Bodies of Persons of the first Quality, 'tis customary to draw up a clear and succinct Relation of what we there find, without going into Argumentations on them, which are frequently useless. This is what was practis'd in the Opening of the Body of the Marquis of *Louvoy*, who died on the 16th of *July* in 1691. This Relation was carried to the King, after being Sign'd by the four Physicians present at the Opening; viz. Monsieur *Daquin*, Monsieur *Fagon*, at present first Physician, Monsieur *Du Chesne*, and Monsieur *Seron*; and by four Chirurgeons, viz. Monsieur *Felix*, Monsieur *Ger-*

vais, Monsieur Dutertres, and my self, who was chose by the Family to perform it.

Ambrose Paré, who was first Chirurgeon to several Kings, *By who Re-* has communicated to us in his Works the Relations of the *parts to be* Opening of the Bodies of the Kings which he served: They are *signed*. all sign'd by Physicians and Chirurgeons which were present, and we don't find any Apothecary's Hand to them: And also at present in all the Relations of the Opening of the Bodies of Persons of the Royal Family which I have perform'd or seen perform'd, all the Chirurgeons charg'd with it have sign'd in Conjunction with the Physicians, and never any Apothecaries, though they have been frequently present.

FIGURE

FIGURE LXI. For EMBALMING.



Customary
use of Em-
balming.

Embalming is an Operation almost as ancient as the World, and which has been practis'd in all Ages; and either out of a venerable Regard to their Relations, or a Principle of Religion, Men have always endeavour'd to preserve their Dead: Of the Truth of which *Arabia* and *Ægypt* have furnish'd an infinite number of Instances; but at present we Embalm none but the Rich and Great, whose Relations only are willing to be at that Expence.

Mr. Peni-
cher's Tract
of Em-
balming.

Monſieur Penicher, a *Parisian* Apothecary, has given us a Treatise of Embalming, according to the Practice of both the Ancients and Moderns, in which are several learned Enquiries on that Subject. He relates the Stories of the Embalming of *David*, *Alexander*, and several others; wherefore I refer you

to him for the Satisfaction of your Curiosity. But talking like a true Apothecary, he gives us so many sorts of Balsamic Powders, that he would very much puzzle us which to chuse, if we did not know that they are almost all alike. He farther pretends, that 'tis the Apothecary's Right to preside in Embalming; that the Composition and Application of the balsamic Matter belong to him, and that the Chirurgeon is present for no other end than to make the Incisions, and fix on the Bandages which he prescribes; but daily Practice overthrows what this Author pretends to advance. 'Tis the Chirurgeon only which Embalms, 'tis he who is charged with the whole Operation; and after the Apothecary has prepar'd what he requires, he is not to concern himself any farther in it, unless he will attend as one of the Chirurgeon's Apprentices or Assistants, to hand to him what he has occasion for.

To whom Embalming belongs.

Frequently Chirurgeons themselves make up the Preparations necessary for this Operation, especially in Armies, when they are to preserve a Body, to the end it may be carried to the Tomb of its Ancestors; but in Royal Families, who retain an Apothecary always in waiting, he always prepares what is necessary, pursuant to the Direction given him by the first Physician, with regard to the Quality of the balsamic Materials, and the Quantity requir'd by the Chirurgeon, which he proportions to the size of the Body to be Embalmed. 'Tis indeed true, as Mr. Penicher observes, that the Apothecary is paid by the Keeper of the King's Plate, who is to draw up an Account of the Funeral Expences, and also to pay him for what he furnishes to that end; as he does the Cryer, who undertakes for the Invitation of the Guests; the Wax-chandler for the Wax; the Plumber for the Coffin; and an infinite number of other Artificers: But if he is paid as a Tradesman, the Money which he receives for his Commodities does not give him any right to preside over the Chirurgeon, nor does it authorize him, as that Author does, to prescribe the Instruments which he is to have in readiness, the Incisions he is to make, and the Bandages to be prepar'd.

Office of the Apothecary.

'Tis also true, that the Physician has no Reward for his Presence, nor the Chirurgeon for his Pains: But Mr. Penicher mistakes when he tells us that the Chirurgeon has no other Perquisites for his trouble, but what he strips off the Body, and the Linen which he makes use of in the Opening and Embalming it: He ought to have known, that these Linens are the Right of the Chirurgeon's Apprentices, who take care not to lose them; that Mr. Felix has always left 'em to them, as I have always done, and that all Chirurgeons, which are not Stupid, will never deprive their Apprentices of their Right.

Rights of the Chirurgeons Apprentices.

Mr. Penicher cites, as a President for Embalming, that performed on the Dauphiness. We are not to be surpris'd if his Relation is not exactly just in several Circumstances, he transcribed it from a Memorial which the Apothecary to that Princess gave him, and its Author believing Pharmacy so much a-

A Relation of the Embalming of the Dauphiness.

bove Chirurgery, that the latter could not dispute it, has by this Memorial taken all advantageous Hints, which seem'd to him to favour his Opinion. But having my self performed that Embalming, none can be a better Evidence in this case: The particular Relation of which, to avoid Repetition, I forbear here, because the Method which I shall lay down, of performing a compleat Balsamation, will inform you of all that passed at that of the Dauphiness.

Three
things ne-
cessary to
Embalming.

After the opening of the Body, and the drawing up and signing of the Relation of the Particulars observed with regard to the Body, the Physicians and Chirurgeons withdraw, leaving to the operating Chirurgeon the care and direction of the Embalming: Wherefore all depending on him, he causes to be brought into the Chamber where the Corps is, all the necessary Ingredients and Instruments for that Operation, and which we know to be of three sorts, first, those which the Plumber is to make; secondly, what belongs to the Chirurgeon; and thirdly, those which relate to the Apothecary.

The Plum-
ber's Busi-
ness.

The Plumber being sent for, comes to take the Chirurgeon's Orders about the size of the Coffin, because if he should content himself with taking measure of the Body, that Case would prove too little to hold it after its Embalming; he bespeaks of him a leaden Barrel to put the Entrails into, and also a leaden Box made of two pieces to shut, to contain the Heart after 'tis Embalm'd; ordering him to bring all of them to the Chamber where the Corps is at the hour which he appoints.

The Chi-
rurgeon's
Apparatus.

The principal part of the Chirurgeon's *Apparatus* consists in Bands; for the Instruments are the same which are used in the opening of the Body. The Chirurgeon is then to prepare five Bands, two of each three Fingers breadth, and four Ells long to bind the Arms; two of four Fingers breadth and six Ells long, each to bind the Legs and Thighs; and one yet broader and longer, to perform the necessary Circumvolutions about the Body.

The Apo-
thecary's
Charge.

'Tis the Apothecary's Business to furnish, 1st, the *aromatic Plants* well pulveris'd in a Mortar; 2d, the *Gums* and *odoriferous Drugs* beaten to a fine Powder; and, 3dly, a *Liniment* to rub over or anoint the Body.

Plants of
which the
Powders
are to be
composed.

The first and coarsest Powder which serves to fill the great Cavities, and to be put in with the Entrails, is composed of four or five and twenty different Plants, to which end we make use of the Leaves of some of them, the Roots or Flowers of others, and yet the Rinds, Barks or Seeds of others: The most proper, and most easie to be gotten are the Leaves of Laurel, Myrtle, Rosemary, Sage, Balm, Rue, Wormwood, Marjoram, Hyssop, Wild-Thyme, Basil; the Roots of Iris, Angelica, *Iris Nostras* and *Calamus Aromaticus*; the Flowers of Roses, Camomile, Melilot, Lavender, and Lemon and Orange-peel, the Seeds of Annise, Fennel, Coriander and Cummin. To all which, when well pulveriz'd, are to be added so many pounds of common Salt, as to augment the whole to thirty pounds weight.

OF

Of the other which is the finest Powder, there must be ten pounds, and it is to be compos'd of ten or twelve Odoriferous Drugs, which are proper to preserve the Body for the space of several Ages; they are Myrrh, Aloes, Frankincense, Benjamin, Storax-Calamita, Cloves, Nutmegs, Cinamon, White-pepper, Sulphur, Allom, Salt, and Salt-peter, all which are to be well pulveriz'd, and pass'd thro' a Sieve.

The Liniment is to be compos'd of Turpentine, Oyl of *Compositi-* Laurel, Liquid Storax, and Balsam *Copahu*, by reason that of *on of the* Peru is so scarce, that alone it would cost more than all the o- *Liniment.* ther Embalming Ingredients: Three Pounds of this Liniment are sufficient to make the necessary Embrocations.

Besides these three Articles, the Apothecary is to provide three or four Pints of Spirit of Wine, five or six great bundles of Tow, Cotton, two Ells of the broadest Sere-cloath, and a large bundle of coarse Cord. The Chirurgeon provided with all these Preparations, is ready to begin the Embalming, which he executes in the following manner.

Having ordered to be set near him the *Leaden-Barrel A*, he takes some handfuls of the courser Powder out of the great Basin *B*, and spread it over the bottom of the Barrel, and above that spreads part of the Entrails, then lays another row or bed of that Powder, and then another lay of the Entrails, thus continuing on *Stratum super Stratum*, 'till he has laid into the Barrel all the parts which were contain'd in the Head, Breast and Belly, except the Heart, which he separates, and puts to soak in Spirit of Wine, 'till he has finish'd the whole Body, when he embalms that in particular. He must remember to end with a lay of Powder, and if the Barrel is not full, he is to fill it up with a bundle of Tow; but if the Plumber has made it too high, the Operator is to order him to cut off all of it that is too long, that the cover being Soldered on, no part of it may remain empty.

The three Venters or Cavities being thus evacuated, we are *Embalma-* to wash them with Spirit of Wine, which is in the Bottle *C*, *ing of the* before we fill them up, which done, we begin with the Head, *three Cavi-* filling up the Skull with the Powder and Tow mix'd together; *ties, and* and having got in as much it can contain, we put it again in- *1. of the* to its place; and before we sow the Hairy Scalp over it, we *Head.* put betwixt them some of the finer or Balsamic Powder which is in the Vessel *D*. We pour some Spirit of Wine into the Mouth to wash it, and then fill it up with the same Powder and Cotton: We do the same to the Nostrils and Ears, and then with the Pencil or Brush *E*, we embrocate the Face, Head and Neck with the Liniment *F*, and after strewing the fine Powder on all those parts, we form a crust over the whole Superfices. We then put the Head into the Linnen Bag *G*, all shaped like a Night-cap, and provided with the Strings *H H*, which we draw close on the Neck, that the whole Head may be perfectly envelop'd in it.

With

Preparation
of the
Breast and
Abdomen.

With the Powder and Tow the Operator fills up the Breast and Belly, which is now but one large Cavity, for in taking out the Entrails, he has before taken out the *Diaphragma*, which separated them from one another: He is not here to be sparing of his Powders which here must prevail, the Tow being only made use of to bind and keep them together: He returns the *Sternum* into its place, and after having covered it with the fine Powder, which he also thrusts betwixt the Ribs and Tegument, he performs the Suture with the Needle I, threaded with the String or Lace K, from the Neck to the Os-pubis, and a Transversal one from one of the lumbar Parts to the other.

Embalming
of the
upper
Members.

With the Pen-knife L, we make around the Arm four large Incisions of half a foot long each, and as deep as to the Bone, and as many on the Wrist; these we wash with Spirit of Wine, and fill with the odoriferous Powder; we cover the Arm with the Liniment with the same Pencil, and gently strow over it the same Balm, which easily sticks on by reason of the Liniment: We then take the Band M, with which we begin at the Hand, rolling it very tight up to the Shoulder where 'tis to end, and be fastened: Whilst the Operator is thus employed about one Arm, an Apprentice is to do the same to the other with the Band N, conform to his Example.

Of the
lower
Members.

The same Operation is to be performed to the Thighs and Legs, with this Difference only, that the Incisions are to be longer, deeper, and more numerous than in the Arms; these Parts thus cut, look like *Switzer's Breeches*. After they have sufficiently imbibed the Spirit of Wine, they are to be filled with Aromatic Powders, the Liniment applied to them, and the Powders over them, the Operator rolls on the Band on one Thigh, whilst an Apprentice applies that P to the other. These two Bands begin at the Feet, and terminate at the Groins.

Of the po-
sterior
Parts.

We then turn the Body, in order to make the like Incisions on the Back at the Region of the Reins, and on the Buttocks; and if the Corps is fat, we are also to do the same around the Belly and Breast: The Lotions, Embrocations, and Application of Powders are ended with the band Q, which is strong, very broad and very long, and beginning at the lower Belly, so perfectly rolls over the Body, that no part of it is left uncovered.

How the
Body is to
be ty'd up.

The Body thus enamelled, we lay it on the Seercloth R, in which we wholly enclose it, cutting it so as to come close over all the Parts without folding it, and with the Cord S, which is to be ten or twelve Ells long, we begin to close it about the Neck to form the Figure of the Head, that it may be accommodated to that of the Coffin, we run it several times around the Body, each Circumvolution at the distance of half a Foot from the other, and draw it as tight as we would a Pack to be sent by the Carrier.

The Body is then put into a Linnen Shroud, which with a String we tie at each of its two Extremities, leaving about a handful beyond each of the Ligatures: We then call for the Coffin T, ordering it to be brought near to the Table where
the

the Body is; and if 'tis a Princess of the Royal Family, the Lady of Honour is to take hold of the handful of the Shroud which is left at the Head, and the Lady of the Wardrobe of that at the Feet, and they lay the Corps into the Coffin, which last Service they claim as their Right.

If the Chirurgeon has any Balsamic Powder left, he strows it in the Coffin, and fills the vacant Spaces with bundles of Aromatic Plants, which he is to have ready provided for that purpose; which done, the Plumber fixes on the Lid of the Coffin, which he folders on as expeditiously and neatly as he can.

Whilst he is foldering the Coffin, the Chirurgeon embalms the Heart; he takes hold of it in the Chin, a Vessel in which he put it, washes it several times in Spirit of Wine, and fills its Ventricles with the finest Balsamic Powder reserved expressly for that end, then encloses it in a bit of Seercloth wholly sprinkled with the same Powder; he binds and fastens it with a small Cord, shaping this small bundle in the Figure of a Heart; then laying it in the Moiety of the Leaden Box V, he covers it with the remaining part X, causing them to be foldered together by the Plumber around the Circumference of the Box, in his Presence.

The Coffin being foldered, we lay it on two Feet in the middle of the Room, and cover it with a Pall, and lay on the Coffin the Box which contains the Heart, which we cover with Crape, and leave both of them to be carried to their destin'd Sepulchre.

Some Ancients pretend to have invented a way of embalming preferable to all others, which was to take out generally all the Flesh, and leaving only the Skin and Bones to substitute in their place Aromatic Drugs and Powder; but this is not to preserve the Body, but only the Skin and Skeleton from Putrefaction.

Some Moderns propose to us easier ways, of which there are several sorts with which Mr. Penicher has filled his Book; wherefore I shall forbear the Recital of them here. But content my self with acquainting you, that the History of Embalming, which I have just laid before you, is that which I have performed on the Dauphiness, and several Persons of the first Quality, being that which I take to be the best of them all.

I have heard of ancient Sepulchres of Plaister, in the middle of which the Body was placed, and also covered with Plaister: That in these sort of Graves the Bodies kept for a long time, without emitting any ill Scent, because the Salt-Peter which is in the Plaister resists Putrefaction, and the Plaister imbibing the stinking Serosities which issue from the Body, stops the offensive Exhalations.

This Fact may put some upon reducing it to Practice, which in my Opinion should be done the following way: The Person resolved to try this Experiment, is to order the making of either a leaden or wooden Coffin proportioned to the bulk of the Body,

Use of the remaining Aromatic Powder.

Embalming of the Heart.

Method of Embalming of some Ancients.

Of several Moderns.

Preservation of Bodies by Plaister.

How to perform it.

Body, which is to be laid into it stark naked, when having ready three or four Hods of Plaister strain'd through a Sack, and after being stirred well, are to be pour'd into the Coffin, so that it reaching to the edges, the Corps may be wholly buried in Plaister: By this Method we may keep a Body several Days in the House, and then lay it in a Vault designed for the Dead, without the Danger of any ill Scent. And in my Opinion 'tis impossible to embalm a Body with more Ease, and at less Expence.

*The Chi-
rurgeon's
Preference
before the
Apothe-
cary.*

By my Relation of Embalmings in general, you may determine whether the Chirurgeon or the Apothecary ought to pre-
side: The first performs whatever is to be done, and his Operations immediately regard human Bodies, and the latter only pulverises the Plants and Gums. In Consultations held on Chirurgical Diseases, the Chirurgeons in Conjunction with the Physician, sign the Prescriptions, which the Apothecaries have no farther Concern in, than to execute them. The next day after that dedicated to St. Luke, Chirurgery and Pharmacy, are to pay their Tributary Homage to Physick; but the Gentlemen of the Faculty never invite the Apothecaries. 'Tis observable, that in the Oeconomy of Royal Families the Physicians are registred first, then the Chirurgeons, and next them the Apothecaries. In short, the King being resolved to bestow Gratification on the Officers of the Dutches of *Burgundy*, which went to *Pont de Beauvoisin* to fetch that Princess, with his own Hand, in the State of the Expence which was presented to him, set down and allotted to Monsieur *Bourdelot*, Physician, one thousand Crowns, to me as her Chirurgeon fifteen hundred Livres, and to Monsieur *Riqueur* her Apothecary one thousand Livres. After all these Marks of Distinction and Preference, how can the Apothecaries pretend to dispute it with the Chirurgeons? But let's allow 'em the pleasure of that fond Notion which does not in the least prejudice Chirurgery, since they alone are of that Opinion.

Gentlemen,

Conclusion.

We are now come to the end of our Course of Operations which I proposed to run through; in which I have endeavoured not to forget any of those which Chirurgery is obliged to perform for the Preservation of human Bodies; considered even from the Moment of their Birth, beginning with instructing you in the manner of making the Ligature on the Navel, which is the first Man is obliged to undergo, and that as soon as he sees the Light; then successively running through all the Parts of the Body, and withal demonstrating the Operations which each of them requires, and ending with the opening and embalming of the dead Corps; you see I have not quitted my Subject 'till enclosed in its Grave.

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